Note remarks

: MB 5,7 n 26 Test sheet : 16.01.91 Edition

Replaces

: ISO-4113 Test oil

: 0 400 876 145 Combination no.

Injection pump

Pump designation : PES6A90D410RS2293 EP type number : 0 410 896 031

Governor

Governor design. : RSV350...1425A2B1028

: 0 420 234 248 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

Engine : OM 353

1st version kW : 92.0 : 2850 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

: 1 680 750 014 Test lines

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 2.15...2.25 : (2.10...2.30)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 1400 1st speed

Rack travel in mm : 9.50...9.60

Del.quantity cm3/: 6.2...6.3

100 s: (6.0...6.5)

cm3 : 0.3Spread

100 s: (0.4)

2nd speed rpm : 350.0 Rack travel in mm : 7.4...7.6 Del.quantity cm3/: 0.9...1.5

100 s: (0.7...1.7)

cm3 : 0.2 Spread 100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del.quantity : 62.0...63.0

1000 : (60.0...65.0)

: 3.00 cm3 Spread

1000 : (4.50)

RATED SPEED

1st version

Control lever

position degrees: 106...114

Testing:

1st rack travel in: 9.50 Speed rpm : 1455...1465 4th rack travel in: 1500

Speed rpm : 0.30...1.40

A01

LOW IDLE 1 Control lever position degrees: 68...76 Setting point w/out bumper spring Speed rpm : 350 Rack travel in mm : 7.0 Testing: Speed rpm : 100 Minimum rack trave: 19.50 Speed rpm : 350 Rack travel in mm : 7.40...7.60 Rack travel in mm: 2.00 rom : 570...630 Speed TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1400
Rack travel in m: 9.50...9.60
2nd speed rpm : 450
Rack travel in m: 9.90...10.00 BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 9.50 rpm : 1455...1465 Speed STARTING FUEL DELIVERY rpm : 100 Speed Rack travel in mm: 15.10...15.50 LOW IDLE Speed rpm : 350 Rack travel in mm : 7.40...7.60 Del.quantity cm3/: 9.0...15.0 1000 s: (7.0...17.0) cm3 : 2.00 Spread 1000 s: (4.00) Remarks:

Note remarks

Test sheet : MB 5,7 o 3 : 16.01.91 Edition : 11.80 Replaces Test oil : ISO-4113

Combination no. : 0 400 876 167

Injection pump

Pump designation : PES6A90D410RS2293 EP type number : 0 410 896 031

Governor

Governor design. : RSV575...1250A88614L

: 0 420 232 171 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M352

: 91.0 1st version kW Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

: 172...175 pressure, bar

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 2.15...2.25 : (2.10...2.30)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rom: 1230 1st speed

Rack travel in mm : 9.80...9.90

Del.quantity cm3/: 6.2...6.3

100 s: (6.0...6.5)

cm3 : 0.3Spread

100 s: (0.4)

rpm : 575.0 2nd speed Rack travel in mm : 5.5...5.7 Del.quantity cm3/: 0.9...1.5

100 s: (0.7...1.7)

cm3 : 0.2Spread 100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1230

: 62.5...63.5 : (60.5...65.5) : 3.00 Del.quantity 1000

cm3 Spread

1000 : (4.50)

RATED SPEED

1st version

Control lever

position degrees: 98...106

Testing:

1st rack travel in: 9.80

rpm : 1290...1300 Speed

4th rack travel in: 1400

Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: 69...77

Setting point w/out bumper spring

Speed rpm : 575 Rack travel in mm : 5.1

Testing:

Speed rpm : 100 Minimum rack trave: 19.50

Speed rpm : 575
Rack travel in mm : 5.00...5.20
Rack travel in mm : 2.00
Speed rpm : 530...590

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1230

Rack travel in m: 9.80...9.90

2nd speed rpm : 500

Rack travel in m: 10.30...10.40

# **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 9.80

rpm : 1290...1300 Speed

#### STARTING FUEL DELIVERY

Speed rpm : 100 Rack travel in mm : 15.10...15.50

# LOW IDLE

Speed rpm : 575
Rack travel in mm : 5.50...5.70
Del.quantity cm3/ : 9.0...15.0
1000 s: (7.0...17.0)
Spread cm3 : 2.00

1000 s: (4.00)

Remarks:

A04

Note remarks

Test sheet Edition : KHD 6,1 e 8 : 26.04.91 : 8.6.90 Replaces

Test oil : ISO-4113

Combination no. : 0 400 876 275

Injection pump

Pump designation : PES6A95D41ORS2471 EP type number : 0 410 896 952

Governor

: RSV325...1150A8C674-Governor design.

3L

: 0 420 232 543 Governer no.

Customer—spec. information Customer

Engine : BF6L913C

1st version kW : 132.0 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00

: (1.85...2.05)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

: 0.50 (0.75) Tolerance + - °

BASIC SETTING

rpm: 1150 1st speed

Rack travel in mm : 11.80...11.90

Del.quantity cm3/: 10.8...11.0

100 s: (10.6...11.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 325.0 Rack travel in mm : 7.2...7.4

Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.4) cm3 : 0.3 Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1150 Speed Aneroid pressure h: 700

: 108.0...110.0 Del.quantity 1000 : (106.0...112.0)

: 3.00 Spread cm3 1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 102...110

Testing:

1st rack travel in: 10.80

Speed rpm : 1190...1200

2nd rack travel in: 4.00

rpm : 1235...1265 Speed

A05

3rd rack travel in: 4.00

rpm : 1285...1315 Speed 4th rack travel in: 1400

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 67...75

Setting point w/out bumper spring

: 325 rom Rack travel in mm : 6.8

Testina:

Speed rpm : 100 Minimum rack trave: 19.50

Speed rpm : 325 Rack travel in mm : 7.20...7.40

Rack travel in mm: 2.00

rpm : 585...645 Speed

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1150
Rack travel in m: 11.80...11.90
2nd speed rpm : 500
Rack travel in m: 11.80...12.00

Aneroid/Altitude Compensator Test

1st version Setting

Speed : 500 rpm hPa : 700 Pressure

Rack travel mm : 11.80...11.90

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.80...10.00 2nd pressure hPa : 340 Rack travel in m: 11.30...11.40

3rd pressure hPa : 160

Rack travel in m: 10.40...10.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700 Speed rpm : 850

Del.quantity cm3/: 103.5...106.5 1000 s: (101.0...109.0)

Spread cm3 :

1000 s: (7.00)

Aneroid pressure h: -

: 500 Speed L DW

Del.quantity cm3/: 62.0...64.0

1000 s: (60.0...66.0)

RACK STOP ADJUSTMENT

Speed rpm : 500

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 10.80

rpm : 1190...1200 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 120.0...130.0 1000 s: (117.0...133.0)

Rack travel in mm : 15.50...15.90

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

The stop position of the control rod must be easily reached with the stop lever

APPLICATION

Installation 2300

Note remarks

Test sheet Edition

: VAL 6,6 a 2 : 03.05.91

Replaces

Test oil

: ISO-4113

Combination no.

: 0 400 876 321AN

Injection pump

Pump designation : PES6A95D32ORS2684

EP type number

: 0 410 896 917

Governor

Governor design.

: RSV325...1050A0c2178

-2R

Governer no.

: 0 420 233 178

Customer

Customer-spec. information : VALMET

Engine

: 6110

1st version kW

: 79.0

Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 0 681 343 009

Opening.

pressure, bar

: 172...175

Test Lines

: 1 680 750 014

Outside diameter

x Wall thickness

x Length mm

: 6.00x2.00x600

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 2.50...2.60

: (2.45...2.65)

Phasing

Firing order

: 0-60-120-180-240-300

: 1-5-3-6-2-4

Tolerance + - °

: 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

Rack travel in mm : 9.00...12.00

& maximum rack tra: 21.00

Difference ° CS : 4.50...5.50

BASIC SETTING

1st speed

rpm: 1080

Rack travel in mm : 12.20...12.30

Del.guantity cm3/: 11.9...12.1

100 s: (11.7...12.3)

Spread

cm3 : 0.3

100 s: (0.6)

rpm : 325.02nd speed

Rack travel in mm: 4.7...4.9

Del.quantity cm3/: 1.3...1.7 100 s: (1.0...1.9) Spread cm3: 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

rpm : 800 Speed Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 1.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1080

119.0...121.0

Del.quantity 1000

: (117.0...123.0)

cm3 1000

: 3.50

: (6.00)

RATED SPEED

Spread

1st version

Control lever

position degrees: 77...85

A07

Testing: 1st rack travel in: 11.20 Speed rpm : 1120...1130 3rd rack travel in: 4.00 Speed rpm: 1160...1185 4th rack travel in: 1310 rpm : 0.30...1.40Speed LOW IDLE 1 Control lever position degrees: 7...15 Setting point w/out bumper spring rpm : 325 Rack travel in mm: 4.2 : 325 Speed rpm Rack travel in mm : 4.70...4.90 Rack travel in mm : 2.00 rpm : 310...370 Speed TORQUE CONTROL Torque control curve - 1st version st speed rpm : 1050 Rack travel in m: 12.20...12.30 1st speed 2nd speed rpm : 500 Rack travel in m: 12.20...12.30 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 500 Del.quantity cm3/: 114.0...117.0 1000 s: (111.5...119.5) Speed rpm : 800 Del.quantity cm3/: 120.0...123.0 1000 s: (117.5...125.5) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.20 Speed rpm : 1120...1130 STARTING FUEL DELIVERY Speed rpm : 100 Rack travel in mm : 19.50...21.00 LOW IDLE rpm : 325 Speed Rack travel in mm : 4.70...4.90

Del.quantity cm3/: 13.0...17.0

1000 s: (10.5...19.5)

Spread cm3 : 3.50 1000 s: (5.50)

Remarks: : APPLICATION

Tractor (tractor engines)

Note remarks

Test sheet : FIA 5,9 c : 24.04.91 Edition : 21.5.90 Replaces Test oil : ISO-4113

Combination no. : 0 400 876 349

Injection pump

Pump designation : PES6A90D410RS2757 EP type number : 0 410 896 086

Governor

: RSV425...1000A1c2233 Governor design.

: 0 420 232 496 Governer no.

Customer-spec. information : IVECO-FLAT Customer

Engine : 8065.25.080

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.25...2.35 : (2.20...2.40) Prestroke mm

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6Phasing : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.80...11.90

Del.quantity cm3/: 9.0...9.1

100 s: (8.8...9.3)

cm3 : 0.3Spread

100 s: (0.5)

rpm : 475.0 2nd speed

Rack travel in mm : 7.1...7.3 Del.quantity cm3/ : 1.0...1.6 100 s: (0.8...1.8)

Spread cm3 : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 800

: 90.0...91.0 Del.quantity 1000 : (88.0...93.0)

: 3.00 Spread

cm3

1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 101...110

Testing:

1st rack travel in: 10.80

rpm : 1040...1050 Speed

2nd rack travel in: 4.00

rpm : 1090...1120 Speed

3rd rack travel in: 4.00

Speed rpm : 1140...1170 4th rack travel in: 1240 Speed rpm : 0.30...1.40

LOW IDLE 1 Control lever

position degrees: 77...85 Setting point w/out bumper spring

rpm : 475 Rack travel in mm: 6.7

Testing:

: 100 Speed rpm Minimum rack trave: 19.50 Speed rpm : 475
Rack travel in mm : 7.10...7.30
Rack travel in mm : 2.00

rpm : 610...670 Speed

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000 Rack travel in m: 11.80...11.90 2nd speed rpm : 500

Rack travel in m: 11.80...12.00

Aneroid/Altitude Compensator Test

1st version Setting

Speed rom : 500 hPa : 800 Pressure

Rack travel mm : 11.80...11.90

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 11.30...11.50

2nd pressure hPa : 780

Rack travel in m: 11.70...11.80

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 10.80

Speed rpm : 1040...1050

STARTING FUEL DELIVERY

A10

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

Note remarks

Test sheet : DAF 6,2 q 4 : 19.10.90 Edition

Replaces

Test oil : ISC-4113

: 0 400 876 369 Combination no.

Injection pump

Pump designation : PES6A95D32ORS2693Z

EP type number : 0 410 896 913

Governor

Governor design. : RSV300...1300A0c2248

: 0 420 233 270 Governer no.

Customer-spec. information Customer : DAF

Engine : DNT 620

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10

: (1.95...2.15)

Rack travel in mm : 7.50...10.50

Firing order : 1-5-3-6-2-

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50

& maximum rack tra: 21.00 Difference ° CS : 2.50...3.50

BASIC SETTING

1st speed rpm: 850

Rack travel in mm : 12.10...12.20

Del.quantity cm3/: 8.8...8.9

100 s: (8.6...9.1)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 300.0 Rack travel in mm : 6.3...6.5 Del.quantity cm3/ : 0.7...1.1

108 s: (0.4...1.3)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 700

: 88.5...89.5 Del.quantity 1000 : (86.5...91.5)

: 3.50 Spread cm3

1000 : (6.60)

RATED SPEED

1st version

Control lever

position degrees: 104...112

Testina: 1st rack travel in: 10.80 Speed rpm: 1340...1350 2nd rack travel in: 4.00 rpm : 1410...1440 Speed 3rd rack travel in: 4.00 rpm : 1440...1470 Speed 4th rack travel in: 1595 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 75...83 Setting point w/out bumper spring : 300 rpm Rack travel in mm: 5.9 Testing: Speed : 100 rpm Minimum rack trave: 19.50 nom : 300 Rack travel in mm : 6.30...6.50 Rack travel in mm : 2.00 : 580...640 Speed rom TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1290 Rack travel in m: 11.70...11.90 2nd speed rpm : 500 Rack travel in m: 12.40...12.50 4th speed rpm : 1020 Rack travel in m: 12.20...12.40 Aneroid/Altitude Compensator Test 1st version Setting pm : 600 hPa : 700 Speed Lbw Pressure Rack travel mm : 12.10...12.20 Measurement Speed 1/min : 600 1st pressure hPa : -Rack travel in m: 11.00...11.20 2nd pressure hPa : 290 Rack travel in m: 11.90...12.00 3rd pressure hPa : 250 Rack travel in m: 11.50...11.70 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700

: 1290

rpm

Del.quantity cm3/: 88.0...90.0 1000 s: (85.5...92.5) Aneroid pressure h: -Speed rpm: 600 Del.quantity cm3/: 65.5...66.5 1000 s: (63.5...68.5)

# BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.80 Speed rpm : 1340...1350

#### LOW IDLE

Remarks:

A12

Speed

Note remarks

Test sheet : VAL 6,6 b : 24.04.91 : 25.1.91 Edition Replaces : ISO-4113 Test oil

: 0 400 876 384 Combination no.

Injection pump

Pump designation : PES6A95D32ORS2806 EP type number : 0 410 896 898

Governor

Governor design. : RSV375...1125A0c2178

-8R

: 0 420 233 280 Governer no.

Customer-spec. information Customer : VALMET

: 6200 Engine

1st version kW : 88.0 : 2250 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

pressure, bar : 172...175

: 1 680 750 014 Test lines

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60

: (2.45...2.65)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasina : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00 & maximum rack tra: 21.00

Difference ° CS : 4.50...5.50

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 9.00...9.10

Del.quantity cm3/: 7.3...7.5

100 s: (7.1...7.7)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 375.0 2nd speed

Rack travel in mm : 4.3...4.5 Del.quantity cm3/ : 1.2...1.6

100 s: (0.9...1.8)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

: 73.0...75.0 Del.quantity

1000 : (71.0...77.0)

: 3.50 cm3 Spread

1000 : (6.00)

RATED SPEED

1st version

A13

Control Lever position degrees: 85...93 Testing: 1st rack travel in: 8.00 rpm : 1140...1150 Speed 2nd rack travel in: 4.00 rpm : 1180...1210 Speed 3rd rack travel in: 4.00 Speed rpm : 1185...1215 4th rack travel in: 1350 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 67...75 Setting point w/out bumper spring rpm : 375 Rack travel in mm: 4.0 Testing: Speed : 100 rpm Minimum rack trave: 19.50 Speed : 375 rom: Rack travel in mm : 4.30...4.50 Rack travel in mm : 2.00 Speed rom : 425...485 TORQUE CONTROL Torque control curve - 1st version rpm : 1100 1st speed Rack travel in m: 9.00...9.10 2nd speed rpm : 500 : 980 4th speed rpm Rack travel in m: 9.30...9.40 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 500 Del.quantity cm3/: 57.0...60.0 1000 s: (54.5...62.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 8.00 rpm : 1140...1150 Speed STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 195.0...205.0 1000 s: (192.0...208.0) Rack travel in mm: 19.50...21.00

LOW IDLE

Speed rpm : 375
Rack travel in mm : 4.30...4.50
Del.quantity cm3/ : 12.0...16.0
1000 s: (9.5...18.5)
Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

**APPLICATION** 

Tractor (tractor engines)

A14

Speed

Note remarks

: KHD 1 g 50 : 26.04.91 Test sheet Edition Replaces : 1.2.91 : ISO-4113 Test oil

Combination no. : 0 400 876 387

Injection pump

Pump designation : PES6A95D41ORS2625 : 0 410 896 926 EP type number

Governor

Governor design. : RSV375...1200A5C2253

: 0 420 232 560 Governer no.

Customer—spec. information Customer : KHD

Engine : BF6L913B

: 125.0 1st version kW Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina (

pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00X2.00X600 x Lenath mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values \_\_\_\_

BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 1.90...2.00 Prestroke mm

: (1.85...2.05)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1200

Rack travel in mm : 11.10...11.20

Del.quantity cm3/: 8.5...8.6

100 s: (8.3...8.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 375.0 Rack travel in mm : 7.3...7.5 Del.quantity cm3/ : 1.1...1.7

100 s: (0.8...1.9) cm3 : 0.3

Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rom : 1200 Aneroid pressure h: 800

Del.quantity : 85.5...88.5)

cm3 : 3.50Spread

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 94...102

Testing:

1st rack travel in: 10.10

Speed rpm : 1240...1250

2nd rack travel in: 4.00

rpm : 1260...1290 Speed

A15

3rd rack travel in: 4.00

rpm : 1280...1310 Speed 4th rack travel in: 1440 rpm : 0.30...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 61...69 Setting point w/out bumper spring

rpm Rack travel in mm: 5.5

Testing:

Speed : 100 rpm . Minimum rack trave: 19.50 : 375 rpm

Rack travel in mm : 5.90...6.10

Rack travel in mm : 2.00 Speed : 435...495 man

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1200

Rack travel in m: 11.10...11.20

2nd speed rpm : 500

Rack travel in m: 12.00...12.10

4th speed rpm : 1030

Rack travel in m: 10.40...10.60

Aneroid/Altitude Compensator Test

1st version Setting

Speed : 500 rpm Pressure hPa : 800

Rack travel mm : 12.00...12.10

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.50...10.60

2nd pressure hPa : 350

Rack travel in m: 11.70...11.80

3rd pressure hPa : 280

Rack travel in m: 11.10...11.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 800

Speed rpm : 800 Del.quantity cm3/: 89.0...91.0 1000 s: (86.5...93.5)

Aneroid pressure h: -: 500 Speed rpm

Del.quantity cm3/: 55.0...57.0 1000 s: (53.0...59.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.10

rpm : 1240...1250 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 120.0...130.0

1000 s: (117.0...133.0)

Rack travel in mm : 16.30...16.70

Remarks:

: TX 150

APPLICATION

Tractor (tractor engines)

Note remarks

Test sheet : MB 14,7 c10 Edition : 26.04.91

Replaces

Test oil : ISO-4113

Combination no. : 0 401 838 711

Injection pump

Pump designation: PE8P110A320/3LS3842-

: 0 411 818 724 EP type number

Governor

Governor design. : RQ300/1050PA187-31

Governer no. : 0 421 801 553

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M442

1st version kW : 203.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 0 681 343 009 assembly

Openina

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10

: (3.95...4.15) Rack travel in mm : 9.00...12.00

3- 5-Firing order : 8- 7- 2- 6-

: 0-45-90-135-180-225-Phasina

: 270-315 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 750

Rack travel in mm : 11.80...11.90

Del.quantity cm3/: 10.4...10.6

100 s: (10.1...10.8)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 300.0 2nd speed Rack travel in mm: 8.2...8.5 Del.quantity cm3/: 1.5...2.1 100 s: (1.2...2.3)

cm3 : 0.4 100 s: (0.7) Spread

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 650

Rack travel in mm : 13.60...14.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

: 104.0...106.0 Del.quantity 1000 : (101.5...108.5)

: 4.00 Spread cm3

1000 : (7.50)

RATED SPEED

1st version

Setting point: Speed rpm : 650

Rack travel in mm: 14.0

Testing:

A17

1st rack travel in: 10.80 Speed rpm : 1090...1100 2nd rack travel in: 4.00 rpm : 1150...1180 Speed 4th rack travel in: 1200 rpm : 0.00...1.50Speed LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 6.9 Testing: Speed rpm : 200 Minimum rack trave: 9.00 Speed rpm : 300 Rack travel in mm : 6.80...7.00 Rack travel in mm : 2.00 rpm : 400...440 START CUT-OUT Speed  $1/\min : 1 (0)$ FUEL DELIVERY CHARACTERISTICS 1st version RACK STOP ADJUSTMENT Speed rpm : 600 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.80 Speed rpm : 1090...1100 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0)

A18

Remarks:

Note remarks

Test sheet : DAF 11,7 o1 Edition : 24.04.91

Replaces

Test oil : ISO-4113

Combination no. : 0 401 846 568

Injection pump

Pump designation : PE6P110A320RS529 : 0 411 816 179 EP type number

Governor

Governor design. : RQ275/1000PA1012 Governer no. : 0 421 801 595

Customer-spec. information

Customer : DAF

Engine : LT 195 G

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm

: (2.75...2.95)

Rack travel in mm : 14.50...15.50

Firing order : 1-5-3-6-2Phasing : 0-60-120-180-240-300

: 0.50 (0.75) Tolerance + - °

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.50...4.70 & maximum rack tra: 14.0...15.0 Difference ° CS : 2.00...4.00

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 15.00...15.10

Del.quantity cm3/: 19.3...19.5

100 s: (19.0...19.7)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 300.02nd speed Rack travel in mm : 7.0...7.2 Del.quantity cm3/ : 2.2...2.7

100 s: (1.9...2.9)

cm3 : 0.4Spread 100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rom : 600 Aneroid pressure h: 1000

: 193.0...195.0 1000 : (190.5...197.5) Del.quantity

cm3 : 4.00 Spread

1000 : (7.50)

RATED SPEED

1st version

Setting point:

rpm : 600 Speed Rack travel in mm: 20.0

Testing:

1st rack travel in: 13.50

rpm : 1025...1040 Speed

2nd rack travel in: 4.00

rpm : 1105...1135 Speed 4th rack travel in: 1300

Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300 Rack broket in mm : 7.1

Test ina:

Speed rpm : 100 Minimum rack trave: 10.50 Speed rpm : 300 Rack travel in mm : 7.00...7.20

Rack travel in mm : 2.00 Speed rpm : 350...390

TORQUE CONTROL

Dimension a mm : 0.30

Torque control curve - 1st version 1st speed rpm : 980

Rack travel in m: 14.50...14.70

2nd speed

nd speed rpm : 600 Rack travel in m: 15.60...15.80

3rd speed rpm : 750 Rack travel in m: 15.10...15.20

4th speed rpm : 825

Rack travel in m: 14.70...14.90

Aneroid/Altitude Compensator Test

1st version

Settina

Speed : 600 rpm hPa : 1000 Pressure

Rack travel mm : 15.00...15.10

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 12.50...12.70

2nd pressure hPa : 440

Rack travel in m: 14.40...14.50

3rd pressure hPa : 340

Rack travel in m: 13.10...13.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000 Speed rpm : 980 Del.quantity cm3/ : 178.0...182.0 1000 s: (175.0...185.0)

Aneroid pressure h: -

Speed : 600 rpm

Del.quantity cm3/: 132.0...134.0 1000 s: (129.5...136.5)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 13.50 Speed rpm : 1025...1040 Speed

STARTING FUEL DELIVERY

LOW IDLE

rpm : 300 Speed

Rack travel in mm : 7.00...7.20 Del.quantity cm3/: 22.0...27.0 1000 s: (19.5...29.5)

cm3 : 4.50 Spread

1000 s: (7.50)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

Note remarks

Test sheet : VOL 12,2 a1 Edition : 29.04.91 Replaces : 02.10.89 Test oil : ISO-4113

Combination no. : 0 401 846 826

Injection pump

Pump designation : PE6P12OA32ORS3178 EP type number : 0 411 826 752

Governor

Governor design. : RQV250...1025PA657-

10

Governer no. : 0 421 813 567

Customer spec. information Customer : VOLVO

Engine : TD122FS

1st version kW : 287.0 Rated speed : 2050

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Opening |

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70 : (3.55...3.75) Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - \* : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 14.00...14.10

Del.quantity cm3/: 25.2...25.4

100 s: (24.9...25.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm: 250.0 Rack travel in mm: 4.8...5.1

Del.quantity cm3/: 1.8...2.3

100 s: (1.5...2.5)

Spread cm3 : 0.5 100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm: 250

travel mm : 1.00...1.40

2nd speed rpm: 450

travel m : 3.60...4.20

3rd speed rpm: 800

travel mm : 6.30...6.70

4th speed rpm : 1070

travel mm : 8.00...8.20

5th speed rpm: 1150

travel mm : 9.30...9.70

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm: 1090

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rom: 700

Aneroid pressure h: 1200 Del.quantity : 252.0...254.0 : (249.0...257.0) 1000

Spread

cm3 : 5.00 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 61...69

Testina:

1st rack travel in: 13.00

Speed rpm : 1055...1065

2nd rack travel in: 4.00

rpm : 1140...1170 Speed

4th rack travel in: 1250

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 6...14

Testing:

Speed : 100 rpm Minimum rack trave: 6.40 rpm

Rack travel in mm : 4.80...5.10

CONSTANT REGULATION

Speed : 250...400 rom

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 rpm hPa : 1200 Pressure

Rack travel mm : 14.00...14.10

Measurement

1/min: 500 Speed

1st pressure hPa : -Rack travel in m: 10.00...10.20

2nd pressure hPa : 120 Rack travel in m: 10.20...10.30

3rd pressure hPa : 810

Rack travel in m: 13.30...13.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -Speed LOW : 700 Del.quantity cm3/: 163.0...165.0 1000 s: (160.0...168.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 13.00

rpm : 1055...1065 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 220.0...240.0 1000 s: (216.0...244.0) Rack travel in mm: 20.00...21.00

LOW IDLE

rpm Speed

Rack travel in mm : 4.80...5.10 Del.quantity cm3/: 18.0...23.0 1000 s: (15.5...25.5) Spread cm3 : 5.00

1000 s: (7.00)

Remarks:

Delivery-valve spring pre-tension =

2.40...2.60 mm.

Permissible alteration from 2.20...2.90

Note remarks

Test sheet : DAF 11,7 h3 Edition : 24.04.91

Replaces

Test oil : ISO-4113

Combination no. : 0 401 846 931

Injection pump

Pump designation : PE6P120A320RS3248Z

EP type number : 0 411 826 798

Governor

Governor design. : RQV250...1000PA851-4

Governer no. : 0 421 813 828

Customer-spec. information Customer : DAF

Engine : WS 222

: 222.0 1st version kW Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening 1

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 075 Test lines

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.20...4.30

: (4.15...4.35) Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasina : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 850

Rack travel in mm : 11.80...11.90

Del.quantity cm3/: 18.9...19.1

100 s: (18.6...19.4)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 250.0 2nd speed Rack travel in mm: 6.6...6.8 Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.3)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1045 1st speed

travel mm : 7.80...8.00 2nd speed rpm : 250 travel mm : 0.70...1.10

3rd speed : 400 rpm

travel mm : 2.50...3.10

: 750 4th speed rpm

travel mm : 4.80...5.20

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1
Speed rpm : 1100
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 850 Speed

Aneroid pressure h: 1000

: 189.0...191.0 Del.quantity

1000 : (186.0...194.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Control Lever

position degrees: 117...125

Testing:

1st rack travel in: 10.80 Speed rpm : 1040...1050 2nd rack travel in: 4.00

Speed rpm : 1120...1150 4th rack travel in: 1250

rpm : 0.00...1.40 Speed

LOW IDLE 1

Control lever

position degrees: 82...90

Testina:

Speed rpm : 100 Minimum rack trave: 7.50 Speed rpm : 250

Rack travel in mm : 5.90...6.10

CONSTANT REGULATION

rpm : 260...380 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

: 600 Speed rpm

hPa : 1000 Pressure

Rack travel mm : 11.80...11.90

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 11.10...11.32 2nd pressure hPa : 230

Rack travel in m: 11.40...11.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 600 Speed

Del.quantity cm3/: 164.0...166.0 1000 s: (161.0...169.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 10.80

Speed rpm : 1040...1050

LOW IDLE

Speed rpm : 250 Rack travel in mm : 5.90...6.10

Remarks:

Note remarks

: DAF 8,2 d 1 Test sheet Edition : 22.03.91

Replaces

Test oil : ISO-4113

Combination no. : 0 401 846 944

Injection pump

Pump designation : PE6P110A720R\$3257Z

: 0 411 816 779 EP type number

Governor

Governor design. : RQV325...1200PA910-1

: 0 421 813 880 Governer no.

Customer-spec. information Customer : DAF

: HS 206 G Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.70...3.80 Prestroke mm : (3.65...3.85)

Rack travel in mm : 13.50...14.50 Firing order : 1-5-3-6-

Phasing : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 7.40...7.60 & maximum rack tra: 13.7...14.7 Difference ° CS : 1.75...3.25

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 14.20...14.30

Del.quantity cm3/: 14.3...14.5

100 s: (14.1...14.8)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 325.0 Rack travel in mm : 7.8...8.0

Del.quantity cm3/ : 1.4...1.9

100 s: (1.1...2.1) cm3 : 0.4Spread

100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1245

travel mm 8.10...8.30 325 2nd speed rpm

: 0.90...1.30 travel mm

3rd speed 500 rpm

2.90...3.50 travel mm

4th speed 008 rom

travel mm : 4.60...5.00

5th speed 1500 rom

: 11.00...12.00 trave! mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 Speed rpm : 1240 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 1000

Del.quantity : 143.5...148.0)

cm3 : 4.00Spread

1000 : (7.50)

# RATED SPEED

1st version Control Lever

position degrees: 118...126

Testina:

1st rack travel in: 13.20 Speed rpm : 1235...1250 2nd rack travel in: 4.00

Speed rpm : 1360...1390 4th rack travel in: 1500

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 80...88

Testing:

rpm : 100 Speed Minimum rack trave: 7.90

Speed rpm : 325 Rack travel in mm : 6.30...6.50

CONSTANT REGULATION

rpm : 340...460 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 600 rpm hPa : 1000 Pressure

: 14.20...14.30 Rack travel mm

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 11.00...11.20

2nd pressure hPa : 430

Rack travel in m: 13.40...13.50

3rd pressure hPa : 200

Rack travel in m: 11.80...12.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 600 Del.quantity cm3/: 80.5...82.5 7000 s: (78.0...85.0)

# BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.20

rpm : 1235...1250 Speed

LOW IDLE

Speed rpm : 325

Rack travel in mm : 6.30...6.50

Remarks:

Note remarks

Test sheet : DAF 8,2 c 1 **Fdition** : 22.03.91

Replaces

Test oil : ISO-4113

Combination no. : 0 401 846 945

Injection pump

Pump designation : PE6P110A720RS3257Z

: 0 411 816 779 EP type number

Governor

Governor design: RQ325/1200PA913-2

: 0 421 801 539 Governer no.

Customer-spec. information : DAF Customer

Engine : HS 206 G

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening 1 0 1

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.70...3.80 Prestroke mm

: (3.65...3.85)

Rack travel in mm : 13.50...14.50 Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Folerance  $+ - \circ : 0.50 (0.75)$ 

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 7.40...7.60 & maximum rack tra: 13.7...14.7 Difference ° CS : 1.75...3.25

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 14.20...14.30

Del.quantity cm3/: 14.3...14.5

100 s: (14.1...14.8)

cm3 : 0.4Spread

100 s: (0.7)

2nd speed rpm : 325.0
Rack travel in mm : 7.8...8.0
Del.quantity cm3/ : 1.4...1.9
100 s: (1.1...2.1)
Spread cm3 : 0.4
100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 550 Rack travel in mm : 15.20...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 1000

: 143.5...145.5 1000 : (141.0...148.0) Del.quantity

cm3 : 4.00 1000 : (7.50) Spread

RATED SPEED

1st version

Setting point:

rpm Rack travel in mm: 15.8

Testing:

1st rack travel in: 13.20

Speed rpm : 1235...1250

2nd rack travel in: 4.00

rpm : 1325...1355 Speed 4th rack travel in: 1500 rpm : 0.00...1.00 Speed LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 325 Rack travel in mm : 6.4 Testina: Speed rpm : 100 Minimum rack trave: 7.90 Speed rpm : 325
Rack travel in mm : 6.30...6.50
Rack travel in mm : 2.00
Speed rpm : 395...435 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1000
Rack travel in m: 14.30...14.40 2nd speed rpm : 1200 Rack travel in m: 14.20...14.40 Aneroid/Altitude Compensator Test 1st version Setting Speed rpm : 600 hPa : 1000 Pressure : 14.20...14.30 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : -Rack travel in m: 11.00...11.20 2nd pressure hPa : 430 Rack travel in m: 13.40...13.50 3rd pressure hPa : 200 Rack travel in m: 11.80...12.00 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: -Speed rpm : 600 Del.quantity cm3/: 80.5...82.5 1000 s: (78.0...85.0) BREAKAWAY 1st version

Speed rpm : 1235...1250

LOW IDLE

Speed rpm : 325 Rack travel in mm : 6.30...6.50

Remarks:

**A28** 

1mm rack travel less than

full load rack tr: 13.20

Note remarks

Test sheet : KHD 9,6 x Edition : 26.04.91 Replaces : 1.2.91 Test oil : ISO-4113

: 0 401 848 792 Combination no.

Injection pump

Pump designation : PE8P12OA920/5LS32O8

EP type number

: 0 411 828 721

Governor

Governor design. : RQ325/1150PA879 : 0 421 801 417 Governer no.

Customer-spec. information Customer : KHD

: BF8L513CP Engine

1st version kW : 294.0 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27 Prestroke mm : 3.40...3.50 : (3.35...3.55)

Rack travel in mm : 15.00...19.00

Firing order : 1-8-7-2-6-5-

Phasina : 0-45-90-135-180-225-

270-315

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1150

Rack travel in mm : 12.30...12.40

Del.guantity cm3/: 18.9...19.1

100 s: (18.6...19.4)

cm3 : 0.6Spread

100 s: (1.0)

rpm : 325.0 2nd speed Rack travel in mm: 6.5...6.7 Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

Spread cm3 : 0.9100 s: (1.3)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 700

Rack travel in mm : 14.70...16.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1150 Speed Aneroid pressure h: 900

Del.quantity : 137.0...(186.0...194.0)

: 6.00 Spread cm3

1000 : (10.00)

RATED SPEED

1st version

Setting point:

Speed rpm Rack travel in mm: 15.5

Testing:

1st rack travel in: 11.30

Speed rpm : 1190...1200 2nd rack travel in: 4.00

speed rpm : 1260...1290 4th rack travel in: 1400 Speed

LOW IDLE 1

Setting point w/out bumper spring

: 325 Speed rpm Rack travel in mm: 6.6

Testina:

rpm Speed : 100 Minimum rack trave: 8.10

Speed rpm: 325
Rack travel in mm: 6.50...6.70
Rack travel in mm: 2.00

Speed : 400...440 rpm

CONSTANT REGULATION

rpm : 300...510 Speed

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

1st speed rpm : 1150

Rack travel in m: 12.30...12.40

2nd speed rpm : 600

Rack travel in m: 12.30...12.50

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 400 rpm

hPa : 900 Pressure

: 12.80...12.90 Rack travel mm

Measurement

1/min: 400 Speed

1st pressure hPa : -

Rack travel in m: 10.20...10.40
2nd pressure hPa : 450
Rack travel in m: 11.00...11.10
3rd pressure hPa : 590

Rack travel in m: 12.00...12.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 400 Speed

Del.quantity cm3/: 104.0...106.0 1000 s: (101.0...109.0)

**BRFAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 11.30

: 1190...1200 Speed rom

STARTING FUEL DELIVERY

Speed rpm

Del.quantity cm3/: 235.0...265.0 1000 s: (230.0...270.0)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,

the start position must be reached.

APPLICATION

Rail car

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB 14,7 d11 : 19.03.91 Edition Replaces Test oil : ISO-4113 Combination no. : 0 401 848 793 Injection pump : 0 411 818 714 EP type number Governor Governor design. 10 : 0 421 813 930 Governer no. Customer-spec. information : MERCEDES-BENZ Customer Engine : 0M442 1st version kW : 192.0 Rated speed : 2100 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Overflow quantity min. 1/h: 100...120 Test rozzle holder : 0 681 343 009 assembly **Opening** : 172...175 pressure, bar Test lines : 1 680 750 015 Outside diameter x Wall thickness

Pumo designation : PE8P110A320LS3842 : RQ\/300...1050PA884x Length mm : 6.00X1.50X600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10 : (3.95...4.15) Rack travel in mm : 9.00...12.00 : 8- 7- 2- 6- 3- 5-4- 1 Firing order : 0-45-90-135-180-225-Phasing Phasing : 270-315 Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 8 BASIC SETTING 1st speed rom : 1050Rack travel in mm : 11.50...11.60 Del.quantity cm3/: 11.7...11.9 100 s: (11.4...12.1) Spread cm3 : 0.4100 s: (0.8) 2nd speed rpm : 300.0 Rack travel in mm : 8.4...8.7 Del.quantity cm3/: 1.5...2.1 100 s: (1.2...2.3) Spread cm3 : 0.4100 s: (0.7) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 300 1st speed : 1.00...1.50 travel mm : 558 2nd speed rpm : 4.30...4.80 travel mm 3rd speed : 820 rpm : 5.90...6.40 travel mm 4th speed : 1107 rpm : 8.30...8.80 travel mm 5th speed : 1183 rpm : 9.80...10.30 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 Speed rpm : 1100 Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed 1000 : (114.5...121.5) Del.quantity cm3 : 4.00 Spread 1000 : (8.00) RATED SPEED 1st version Control lever position degrees: 116...124 Testing: 1st rack travel in: 10.50 rpm : 1090...1100 Speed 2nd rack travel in: 4.00 rpm : 1135...1165 Speed 4th rack travel in: 1250 Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 86...94 Testing: Speed : 200 rpm Minimum rack trave: 10.50 Speed rpm : 300 Rack travel in mm : 8.40...8.70 CONSTANT REGULATION rpm : 300...450 Speed START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 600 Del.quantity cm3/ : 98.0...104.0 1000 s: (95.0...107.0) Spread cm3 : 6.001000 s: (9.00) BREAKAWAY full load rack tr: 10.50 rpm : 1090...1100 Speed

Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0) Remarks:

1

1st version 1mm rack travel less than

STARTING FUEL DELIVERY

Speed : 100 COM

**BO**4

Note remarks

: MB 14,7 L 3 : 19.03.91 Test sheet Edition : 18.2.91 Replaces Test oil : ISO-4113

Combination no. : 0 401 848 806

Injection pump

Pump designation : PE8P110A320LS3846-1

: 0 411 818 719 EP type number

Governor

Governor design. : RQ300/1050PA187-28

: 0 421 801 492 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M442 Engine

1st version kW : 213.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50 : (4.35...4.55)

Rack travel in mm : 9.00...12.00 Firing order : 8-7-2-6-3-5-

: 0-45-90-135-180-225-Phasing

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.20...11.30

Del.quantity cm3/: 12.2...12.4

100 s: (11.9...12.6)

Spread cm3 : 0.8

100 s: (1.3)

rpm : 300.0 2nd speed

Rack travel in mm: 6.4...7.0 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.4)

cm3 : 0.6Spread 100 s: (1.1)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 650 Speed Rack travel in mm : 13.10...13.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed : 1050 rpm

: 122.0...124.0 Del.quantity

1000 : (119.5...126.5)

cm3 : 8.50 Spread

1000 : (13.00)

RATED SPEED

1st version

Setting point:

Speed rpm Rack travel in mm: 13.5 Testing:

1st rack travel in: 10.20

rpm : 1080...1090 Speed

2nd rack travel in: 4.00

Speed rpm : 1160...1190 4th rack travel in: 1300 Speed rpm

rpm : 0.00...2.00 Speed

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300 Rack travel in mm: 6.7

Testing:

Speed rpm : 200 Minimum rack trave: 8.50

Speed rpm : 300
Rack travel in mm : 6.40...7.00
Rack travel in mm : 2.00
Speed rpm : 390...430

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600 Del.quantity cm3/: 119.0...125.0

1000 s: (116.5...127.5)

cm3 : 11.00 Spread 1000 s: (14.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 10.20

Speed rpm : 1080...1090

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 130.0...150.0 1000 s: (126.0...154.0)

Remarks:

Note remarks

Test sheet : MB 14,7 d13 Edition : 26.04.91

Replaces

Test oil : ISO-4113

: 0 401 848 811 Combination no.

Injection pump

Pump designation : PE8P110A320LS3842-2

EP type number : 0 411 818 722

Governor

Governor design. : RQV350...1050PA378-

11

: 0 421 813 714 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M442 Engine

1st version kW : 213.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

: 0 681 343 009 assembly

Openina

prassure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

quantity min. 1/h: 100...120

Test nozzle holder

: 6.00X1.50X600

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10 : (3.95...4.15)

Rack travel in mm : 9.00...12.00

: 8-7-2-6-3-5-Firing order

: 0-45-90-135-180-225-Phasing

: 270-315 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

rpm : 10501st speed

Rack travel in mm : 12.70...12.80

Del.quantity cm3/: 13.7...13.9

100 s: (13.4...14.1)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 350.0 Rack travel in mm : 7.9...8.5 Del.quantity cm3/: 1.5...2.1

100 s: (1.2...2.3)

cm3 : 0.4Spread

100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 1.50...1.70 travel mm

rpm : 800 2nd speed

: 4.90...5.30 travel mm : 1100 3rd speed

rpm

travel mm : 7.90...8.50

: 1150 4th speed man

: 8.90...9.70 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1110 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed

**B07** 

Del.quantity : 137.0...139.0 1000 : (134.5...141.5)

Spread : 4.00 cm3 1000 : (7.00)

RATED SPEED

1st version Control lever

position degrees: 118...126

Testina:

1st rack travel in: 11.70

rpm : 1090...1100 Speed

2nd rack travel in: 4.00

rpm : 1140...1170 Speed

4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 70...78

Testing:

rpm : 250 Speed Minimum rack trave: 9.50

Speed rpm : 350 Rack travel in mm : 7.90...8.50

CONSTANT REGULATION

rpm : 350...450 Speed

START CUT-OUT

1/min: 270 (290) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750 Del.quantity cm3/: 124.0...128.0

1000 s: (121.0...131.0)

cm3 : 5.00 Spread

1000 s: (8.00)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 11.70

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

Speed : 100 rom

Del.quantity cm3/: 150.0...170.0 1000 s: (146.0...174.0)

Remarks:

B08

Note remarks

Test sheet : MB 14,7 c11 Edition : 26.04.91

Replaces

Test oil : ISO-4113

Combination no. : 0 401 848 817

Injection pump

Pump designation : PE8P110A320LS3842

EP type number : 0 411 818 714

Governor

Governor design. : RQ300/1050PA187-31

Governer no. : 0 421 801 553

Customer-spec. information

: MERCEDES-BENZ Customer

: 0M442 Engine

1st version kW : 195.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 0 681 343 009 assembly

Openina

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.00...4.10 Prestroke mm : (3.95...4.15)

Rack travel in mm : 9.00...12.00

: 8- 7- 2- 6- 3- 5-Firing order

: 0-45-90-135-180-225-Phasing

270-315 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 750

Rack travel in mm : 11.80...11.90

Del.quantity cm3/: 10.4...10.6

100 s: (10.1...10.8)

cm3 : 0.4Spread

100 s: (0.7)

2nd speed rpm : 300.0Rack travel in mm: 8.2...8.5

Del.quantity cm3/: 1.5...2.1

100 s: (1.2...2.3)

cm3 : 0.4Spread 100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 650

Rack travel in mm : 13.60...14.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Del.quantity : 104.0...106.0 1000 : (101.5...108.5)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed Lbw

Rack travel in mm: 14.0

Testing:

1st rack travel in: 10.80

rpm : 1090...1100 Speed 2nd rack travel in: 4.00 rpm : 1150...1180 Speed 4th rack travel in: 1200 Speed rom : 0.00...1.50LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 6.9 Testina: Speed rpm : 200 Minimum rack trave: 9.00 Speed rpm : 300
Rack travel in mm : 6.80...7.00
Rack travel in mm : 2.00 rpm : 400...440 Speed START CUT-OUT Speed  $1/\min : 1(0)$ FUEL DELIVERY CHARACTERISTICS 1st version rpm : 1050 Speed Del.quantity cm3/: 118.0...122.0 1000 s: (115.0...125.0) cm3 : 6.00Spread 1000 s: (9.00) RACK STOP ADJUSTMENT Speed rpm : 600 BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.80 rpm : 1090...1100 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 140.0...160.0 1000 s: (136.0...164.0) Remarks:

Note remarks

Test sheet : MB 14,7 d12 : 24.04.91 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 401 848 818

Injection pump

Pump designation : PE8P110A320LS3842 EP type number : 0 411 818 714

Governor

Governor design. : RQV300...1050PA884-8

: 0 421 813 889 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

Engine : 0M442

: 195.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 0 681 343 009 assembly

Openina

: 172...175 pressure, bar

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.00...4.10 : (3.95...4.15) Prestroke mm

Rack travel in mm : 9.00...12.00 : 8-7-2-6-3-5-4-1 Firing order

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

rom: 750 1st speed

Rack travel in mm : 11.80...11.90

Del.quantity cm3/: 10.4...10.6

100 s: (10.1...10.8)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 300.0 2nd speed Rack travel in mm : 8.2...8.5 Del.quantity cm3/ : 1.5...2.1

100 s: (1.2...2.3) Spread

cm3 : 0.4 100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.00...1.50

2nd speed rpm : 608 travel mm

: 4.80...5.30 3rd speed rpm : 820

travel mm 5.90...6.40

: 1107 4th speed man

8.30...8.80 travel mm 1280

5th speed rpm : 11.00...12.00 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1130 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 750 Speed

Del.quantity : 104.0...106.0 1000 : (101.5...108.5) cm3 : 4.00 1000 : (7.50) Spread RATED SPEED 1st version Control lever position degrees: 117...125 Rack travel in mm : 8 Testing: 1st rack travel in: 10.80 rpm : 1090...1100 Speed 2nd rack travel in: 4.00 Speed rpm: 1150...1180 4th rack travel in: 1250 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 82...90 Testing: Speed < : 200 rpm Minimum rack trave: 10.00 : 300 rpm Rack travel in mm : 6.80...7.00 CONSTANT REGULATION rpm : 300...450 Speed START CUT-OUT Speed 1/min: 220 (240) FUEL DELIVERY CHARACTERISTICS 1st version rpm : 1050 Speed Del.quantity cm3/: 118.0...122.0 1000 s: (115.0...125.0) Spread cm3 : 6.00 1000 s: (9.00) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.80 Speed rpm : 1090...1100 STARTING FUEL DELIVERY

: 100

rpm

Speed

**B12** 

Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0)

Remarks:

Note remarks

: MB 14,7 c12 Test sheet : 26.04.91 Edition

Replaces

: ISO-4113 Test oil

: 0 401 848 819 Combination no.

Injection pump

Pump designation: PE8P110A320LS3842-1

EP type number : 0 411 818 716

Governor

Governor design. : RQ300/1050PA187-31

: 0 421 801 553 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

: 0M442 Engine

1st version kW : 203.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Lenath mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10 : (3.95...4.15)

Rack travel in mm : 9.00...12.00 Firing order : 8-7-2-6-3-5-

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 750

Rack travel in mm : 11.80...11.90

Del.quantity cm3/: 10.4...10.6

100 s: (10.1...10.8)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 300.02nd speed

Rack travel in mm : 8.2...8.5 Del.quantity cm3/ : 1.5...2.1

100 s: (1.2...2.3) cm3 : 0.4

Spread

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 650 Speed

Rack travel in mm : 13.60...14.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

: 104.0...106.0 Del.quantity

1000 : (101.5...108.5)

Spread : 4.00 cm3

1000 : (7.50)

RATED SPEED

1st version

Setting point:

: 650 Speed rpm

Rack travel in mm: 14.0

1st rack travel in: 10.80

rpm : 1090...1100 Speed 2nd rack travel in: 4.00 rpm : 1150...1180 Speed 4th rack travel in: 1200 rpm : 0.00...1.50 Speed LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 6.9 Testing: rpm : 200 Speed Minimum rack trave: 9.00 rpm : 300 Speed Rack travel in mm : 6.80...7.00 Rack travel in mm : 2.00 rpm : 400...440 Speed START CUT-OUT  $1/\min : 1(0)$ Speed FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 1050 Del.quantity cm3/: 118.0...122.0 1000 s: (115.0...125.0) Spread cm3 : 6.001000 s: (9.00) RACK STOP ADJUSTMENT Speed rpm : 600 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.80 Speed rpm : 1090...1100 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 140.0...160.0 1000 s: (136.0...164.0)

Remarks:

#### Note remarks

Test sheet : KHD 16,0 e : 24.04.91 Edition Replaces : 19.3.91 Test oil : ISO-4113

Combination no. : 0 401 849 752

Injection pump

Pump designation : PE10P110A920/5LS3276

EP type number : 0 411 819 712

Governor

Governor design. : RQV300...1150PA997

: 0 421 813 927 Governer no.

Customer-spec. information Customer : KHD

Engine : F 10L513

: 223.0 : 2300 1st version kW Rated speed

## TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.10...3.20 : (3.05...3.25)

Rack travel in mm : 9.00...12.00

: 1- 10- 9- 4- 3- 6-Firing order

5- 8- 7- 2

: 0-27-72-99-144-171-216-243-288-315 : 0.50 (0.75) Phasing

Tolerance + - °

Time to cyl. no. : 1

#### BASIC SETTING

1st speed rpm: 1150

Rack travel in mm : 9.90...10.00

Del.quantity cm3/: 10.8...11.0

100 s: (10.5...11.3)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 375.0 Rack travel in mm : 5.4...5.6 Del.quantity cm3/ : 1.2...1.7

100 s: (1.0...2.0) Spread cm3 : 0.4

100 s: (0.7)

# (B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm:375

travel mm : 2.30...2.70 2nd speed 510 rpm travel mm 3.60...4.10 3rd speed 870 rpm 7.40...7.90 travel mm 1200 4th speed rom travel mm

9.90...10.40 1300 5th speed

rom

travel mm : 10.90...11.30

# GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1250 Speed

Rack travel in mm : 15.20...17.80

#### FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1150 Speed

Del.quantity : 108.0...113.0)

Spread

cm3 : 4.001000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 98...106

Testing:

1st rack travel in: 8.90

Speed rpm : 1190...1200 2nd rack travel in: 4.00

Speed rpm : 1270...1300 4th rack travel in: 1400

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 15...23

Testing:

rpm : 100 Speed

Minimum rack trave: 7.10

rpm : 375

Rack travel in mm : 4.40...4.60

CONSTANT REGULATION

rpm : 300...420 Speed

START CUT-OUT

Speed

1/min : 220 (0)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700 Del.quantity cm3/ : 100.0...104.0 1000 s: (97.0...107.0)

Spread cm3 : 6.00

1000 s: (9.00)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.90

rpm : 1190...1200 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 135.0...165.0 1000 s: (131.0...169.0)

Speed rpm : 375 Rack travel in mm : 4.40...4.60

Remarks:

LOW IDLE

Note remarks

: MB 18,3 n 2 : 26.04.91 Test sheet Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 401 849 753

Injection pump

Pump designation : PE10P110A320LS3844

EP type number : 0 411 819 710

Governor

Governor design. : RQ300/1050PA187-32

: 0 421 801 554 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

Engine : OM 443

: 243.0 : 2100 1st version kW Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 130...150

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

: 1 680 750 015 Test lines

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10 : (3.95...4.15)

Rack travel in mm : 9.00...12.00

Firing order : 10-9-4-1-8-7

- 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-

216-261-288-333 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 10

BASIC SETTING

1st speed rpm: 750

Rack travel in mm : 11.60...11.70

Del.guantity cm3/: 10.2...10.4

100 s: (9.9...10.6)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 300.02nd speed

Rack travel in mm: 8.0...8.3 Del.quantity cm3/: 1.5...2.1

100 s: (1.2...2.3)

cm3 : 0.4

Spread

100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 600

Rack travel in mm: 13.60...14.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

: 102.0...104.0 Del.quantity 1000 : (99.5...106.5)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version

Setting point:

: 600 Speed rpm Rack travel in mm: 13.7

Testina:

1st rack travel in: 10.60

Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1150...1180
4th rack travel in: 1200
Speed rpm : 0.00...1.50

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.9

Testing:

Speed rpm : 200 Minimum rack trave: 8.50 Speed rpm : 300

Rack travel in mm: 6.80...7.00
Rack travel in mm: 2.00
Speed rpm: 400...440

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm: 1050

Del.quantity cm3/: 116.0...120.0 1000 s: (113.0...123.0)

Spread cm3 : 6.00 1000 s: (9.00)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.60 Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm: 100

Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0)

Remarks:

Note remarks

: DAF 11,7o17 : 24.04.91 Test sheet Edition

Replaces

Test oil : ISO-4113

: 0 401 876 295R Combination no.

Injection pump

Pump designation : PE6P120A320RS415-1R

EP type number : 0 411 826 123

Governor

: RSV250...1000P5A508-Governor design.

: 0 421 833 194 Governer no.

: 0763424 Cust. part no.

Customer-spec. information Customer : DAF

: DKXD 1160 ATi M Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

**Opening** 

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90 : (2.75...2.95) Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 850 1st speed

Rack travel in mm : 11.10...11.20

Del.quantity cm3/: 17.6...17.8

100 s: (17.3...18.1)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0Rack travel in mm: 6.7...6.9

Del.quantity cm3/: 1.4...2.0 100 s: (1.1...2.3)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 700 Del.quantity : 1/0.0...181.0)

cm3 : 5.00 Spread

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: ?

Testing:

1st rack travel in: 10.00

rpm : 1035...1045 Speed

2nd rack travel in: 4.00 rpm : 1115...1145 Speed 3rd rack travel in: 4.00 rpm : 1190...1220 Speed 4th rack travel in: 1350 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 19...27 Setting point w/out bumper spring rpm : 250 Rack travel in mm: 6.0 Testing: Speed rpm : 100 Speed rpm : 250 Rack travel in mm : 6.40...6.60 Rack travel in mm : 2.00 Speed rpm : 630...690 TORQUE CONTROL Torque control curve - 1st version rpm : 850 1st speed Rack travel in m: 11.40...11.50 2nd speed rpm : 400 Rack travel in m: 11.40...11.60 3rd speed rpm : 300 Rack travel in m: 11.70...12.20 Aneroid/Altitude Compensator Test 1st version Setting rpm : 600 Speed Pressure hPa : 700 Rack travel mm : 11.10...11.20 Measurement Speed 1/min: 600 1st pressure hPa : -Rack travel in m: 10.30...10.50 2nd pressure hPa : 210 Rack travel in m: 10.70...10.90 FUEL DELIVERY CHARACTERISTICS 1st version

1st version 1mm rack travel less than

full load rack tr: 10.00 Speed rpm : 1035...1045

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 305.0...345.0 1000 s: (301.0...349.0) Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 250 Rack travel in mm : 6.40...6.60

Remarks:

B20

**BREAKAWAY** 

Speed

Aneroid pressure h: -

rpm : 600

1000 s: (137.0...145.0)

Del.quantity cm3/: 140.0...142.0

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet Edition : DAF 11,6018 : 24.04.91 Replaces Test oil : ISO-4113 Combination no. : 0 401 876 295S Injection pump Pump designation : PE6P120A320RS415-1S : 0 411 826 123 EP type number Governor Governor design. : RSV250...1000P5A508-Governer no. : 0 421 833 194 Cust. part no. : 0763415 Customer-spec. information Customer : DAF Engine : DKX 1160 ATi M TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 019 assembly Opening pressure, bar : 207...210 Orifice plate diameter mm : 0,8 Test lines : 1 680 750 067 Outside diameter x Wall thickness : 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90 : (2.75...2.95) Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180-240-300 Tolerance + - ° : 0.50 (0.75) BASIC SETTING rpm: 850 1st speed Rack travel in mm : 12.10...12.20 Del.quantity cm3/: 19.7...19.9 100 s: (19.4...20.2) Spread cm3 : 0.5 100 s: (0.9) rpm : 250.02nd speed Rack travel in mm: 6.7...6.9 Del.quantity cm3/: 1.4...2.0 100 s: (1.1...2.3) Spread cm3 : 0.8100 s: (1.2) GUIDE SLEEVE POSITION Control-lever position Degree: -3 rpm : 800 Speed Rack travel in mm : 0.30...0.70 Governor spring pre-tension Click setting x : 4.75 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 850 Aneroid pressure h: 700 Del.quantity : 197.0...199.0 1000 : (194.0...202.0) : 5.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: ? Testing: 1st rack travel in: 11.00 rpm : 1035...1045 Speed

2nd rack travel in: 4.00 rpm : 1115...1145 Speed 3rd rack travel in: 4.00 Speed rpm : 1190...1220 4th rack travel in: 1350 rpm : 0.30...1.40Speed LOW IDLE 1 Control lever position degrees: 19...27 Setting point w/out bumper spring Speed rpm : 250 Rack travel in mm : 6.0 Testing: Speed rpm : 100 : 250 Speed rpm Rack travel in mm : 6.40...6.60 Rack travel in mm : 2.00 : 630...690 Speed rom TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 850 Rack travel in m: 12.30...12.40 2nd speed rpm : 400 Rack travel in m: 12.30...12.50 3rd speed rpm : 300 Rack travel in m: 12.60...13.10 Aneroid/Altitude Compensator Test 1st version Setting rpm : 600 hPa : 700 Speed mpm Pressure Rack travel mm : 12.10...12.20 Measurement 1/min: 600 Speed 1st pressure hPa :-Rack travel in m: 10.30...10.50 2nd pressure hPa : 270 Rack travel in m: 11.70...11.80 3rd pressure hPa : 190 Rack travel in m: 10.60...11.00 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: rpm : 600 Speed Del.quantity cm3/: 140.0...142.0 1000 s: (137.0...145.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 11.00 Speed rpm : 1035...1045

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 305.0...345.0 1000 s: (301.0...349.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 250

Rack travel in mm : 6.40...6.60

Remarks:

Note remarks

Test sheet

: DAF 11,6019 : 24.04.91

Edition Replaces

Test oil

: ISO-4113

Combination no.

: 0 401 876 295T

Injection pump

Pump designation : PE6P120A320RS415-1T

EP type number

: 0 411 826 123

Governor

Governor design.

: RSV250...1000P5A508-

Governer no.

: 0 421 833 194

Cust. part no.

: 0763410

Customer-spec, information

Customer

: DAF

Engine

: DKVD 1160 AT i M

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 1 688 901 019

**Opening** 

pressure, bar

: 207...210

Orifice plate

diameter mm

: 0,8

Test lines

: 1 680 750 067

Outside diameter

x Wall thickness

x Length mm

: 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

Firing order

: 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4

Phasing

Spread

2nd speed

Spread

: 0-60-120-180-240-300

Tolerance + - °

: 0.50 (0.75)

BASIC SETTING

1st speed

rpm: 600

Rack travel in mm : 9.50...9.60

Del.quantity cm3/: 12.3...12.5

100 s: (12.0...12.8)

cm3 : 0.5

100 s: (0.9)

rpm : 250.0

Rack travel in mm: 6.7...6.9 Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.3)

cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm

Del.quantity

: 123.5...125.5 : (120.5...128.5) 1000

Spread

: 5.00 cm3

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: ?

Testing:

1st rack travel in: 7.90

rpm : 1035...1045 Speed

2nd rack travel in: 4.00

rom : 1115...1145 Speed 3rd rack travel in: 4.00 Speed rpm : 1190...1220 4th rack travel in: 1350 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 19...27 Setting point w/out bumper spring rpm : 250 Rack travel in mm: 6.0 Testing: Speed : 100 rpm rpm : 250 Speed Rack travel in mm : 6.40...6.60 Rack travel in mm: 2.00 : 630...690 Speed rpm TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 980 Rack travel in m: 8.90...9.10 2nd speed rpm : 600 Rack travel in m: 9.70...9.80 3rd speed rpm : 735 Rack travel in m: 9.40...9.50 FUEL DELIVERY CHARACTERISTICS 1st version rpm : 980 Speed Del.quantity cm3/: 136.5...140.5 1000 s: (133.5...143.5) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 7.90 rpm : 1035...1045 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 305.0...345.0 1000 s: (301.0...349.0) Rack travel in mm : 19.50...21.00 LOW IDLE rpm : 250 Rack travel in mm : 6.40...6.60 Remarks:

Note remarks

Test sheet : DAF 11,6020 Edition : 24.04.91

Replaces

Test oil : ISO-4113

Combination no. : 0 401 876 2950

Injection pump

Pump designation : PE6P120A320RS415-1U

EP type number : 0 411 826 123

Governor

: RSV250...1000P5A508-Governor design.

: 0 421 833 194 Governer no.

: 0763405 Cust. part no.

Customer-spec. information

Customer : DAF

: DKV 1160 AT; M Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 600 1st speed

Rack travel in mm : 10.30...10.40

Del.quantity cm3/: 14.2...14.4

100 s: (13.9...14.7)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 250.0 2nd speed Rack travel in mm: 6.7...6.9

Del.quantity cm3/: 1.4...2.0 100 s: (1.1...2.3)

cm3 : 0.8 Spread 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Del.quantity : 142.0...144.0 1000 : (139.0...147.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: ?

Testing:

1st rack travel in: 9.10

rpm : 1035...1045 Speed

2nd rack travel in: 4.00

rpm : 1115...1145 Speed 3rd rack travel in: 4.00 Speed rpm : 1190...1220 4th rack travel in: 1350 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 19...27 Setting point w/out bumper spring rpm : 250 Rack travel in mm: 6.0 Testina: : 100 Speed rom : 250 Speed rpm Rack travel in mm : 6.40...6.60 Rack travel in mm: 2.00 Speed rpm : 630...690 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 980 Rack travel in m: 10.10...10.30 2nd speed rpm : 600 Rack travel in m: 10.60...10.70 3rd speed rpm : 735 Rack travel in m: 10.40...10.50 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 980 Del.quantity cm3/ : 157.0...161.0 1000 s: (154.0...164.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 9.10 rpm : 1035...1045 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 305.0...345.0 1000 s: (301.0...349.0) Rack travel in mm : 19.50...21.00 LOW IDLE Speed rpm : 250 Rack travel in mm : 6.40...6.60 Remarks:

Note remarks

Test sheet : DAF 11,6021 Edition : 24.04.91

Replaces

Test oil : ISO-4113

Combination no. : 0 401 876 296N

Injection pump

Pump designation : PE6P120A320RS415-1N

EP type number : 0 411 826 123

Governor

: RSV250...1100P5A508-Governor design.

: 0 421 833 195 Governer no.

Cust. part no. : 0763409

Customer-spec. information

Customer : DAF

: DKVD 1160 AT; M Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 : (2.75...2.95) Prestroke mm

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

BASIC SETTING

1st speed rpm: 600

Rack travel in mm: 10.20...10.30

Del.quantity cm3/: 13.9...14.1

100 s: (13.6...14.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0 Rack travel in mm : 6.7...6.9 Del.quantity cm3/ : 1.4...2.0 100 s: (1.1...2.3)

Spread

cm3 : 0.8 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 700 Del.quantity : 139.5...141.5 1000 : (136.5...144.5)

Spread cm3 : 5.00

: (9.00) 1000

RATED SPEED

1st version

Control Lever

position degrees: ?

Testing:

1st rack travel in: 8.40

Speed rpm : 1135...1145

2nd rack travel in: 4.00 rpm : 1200...1230 Speed 3rd rack travel in: 4.00 Speed rpm : 1270...1300 4th rack travel in: 1430 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 68...76 Setting point w/out bumper spring Speed rpm : 250 Rack travel in mm : 6.0 Testing: Speed rpm : 100 rpm : 250 Speed Rack travel in mm : 6.40...6.60 Rack travel in mm: 2.00 Speed rpm : 630...690 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 980 Rack travel in m: 9.40...9.60 2nd speed rpm : 600 Rack travel in m: 10.50...10.60 3rd speed rpm : 700 Rack travel in m: 10.20...10.30 4th speed rpm : 800 Rack travel in m: 9.80...10.00 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 Speed rpm\_ : 980 Del.quantity cm3/: 144.5...148.5 1000 s: (141.5...151.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 8.40 : 1135...1145 Speed rpm STARTING FUEL DELIVERY : 100 Speed rom Del.quantity cm3/: 305.0...345.0 1000 s: (301.0...349.0) Rack travel in mm : 19.50...21.00 LOW IDLE

Speed rpm : 250 Rack travel in mm : 6.40...6.60

Remarks:

BOSCH NJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : DAF 11,6022 : 24.04.91 Edition Replaces Test oil : ISO-4113 : 0 401 876 296P Combination no. Injection pump Pump designation : PE6P12OA32ORS415-1P EP type number : 0 411 826 123 Governor Governor design. : RSV250...1100P5A508-: 0 421 833 195 Governer no. Cust. part no. : 0763404 Customer-spec. information Customer : DAF Engine : DKV 1160 ATi M TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 019 assembly Openina . : 207...210 pressure, bar Orifice plate diameter mm : 0,8 Test lines : 1 680 750 067 Outside diameter x Wall thickness x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90 : (2.75...2.95) Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order : 0-60-120-180-240-300 Phasing Tolerance + - ° : 0.30 (0.75) BASIC SETTING 1st speed rpm: 600 Rack travel in mm : 11.40...11.50 Del.quantity cm3/ : 16.7...16.9 100 s: (16.4...17.2) Spread cm3 : 0.5100 s: (0.9) 2nd speed rpm : 250.0Rack travel in mm: 6.7...6.9 Del.quantity cm3/: 1.4...2.0 100 s: (1.1...2.3) cm3 : 0.8Spread 100 s: (1.2) GUIDE SLEEVE POSITION Control-lever position Degree: -3 rpm : 800 Speed Rack travel in mm : 0.30...0.70 Governor spring pre-tension Click setting x : 4.75FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 600 Aneroid pressure h: 700 Del.quantity : 167.0...169.0 1000 : (164.0...172.0) : 5.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: ? Testing:

1st rack travel in: 9.20

Speed

rpm : 1135...1145

2nd rack travel in: 4.00 rpm : 1200...1230 Speed 3rd rack travel in: 4.00 Speed rpm : 1270...1300 4th rack travel in: 1430 Speed rom : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 68...76 Setting point w/out bumper spring rpm : 250 Speed Rack travel in mm: 6.0 Testing: : 100 Speed rpm : 250 Speed rom Rack travel in mm : 6.40...6.60 Rack travel in mm : 2.00 Speed rpm : 630...690 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 980 Rack travel in m: 10.20...10.40 rpm : 600 2nd speed Rack travel in m: 11.70...11.80 3rd speed rpm : 725 Rack travel in m: 11.00...11.20 4th speed rpm : 800 Rack travel in m: 10.50...10.70 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rpm Pressure hPa : 700 Rack travel mm : 11.40...11.50 Measurement 1/min: 600 Speed 1st pressure hPa : -Rack travel in m: 10.30...10.50 2nd pressure hPa : 380 Rack travel in m: 11.10...11.20 3rd pressure hPa : 350 Rack travel in m: 10.60...10.90 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 Speed rpm : 980 Del.quantity cm3/ : 158.0...162.0 1000 s: (155.0...165.0)

Ameroid pressure h: Speed rpm : 600
Del.quantity cm3/ : 140.0...142.0
1000 s: (137.0...145.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.20 Speed rpm : 1135...1145

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 305.0...345.0 1000 s: (301.0...349.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 250 Rack travel in mm : 6.40...6.60

Remarks:

:

## Note remarks

: DAF 11,6t30 Test sheet Edition : 24.04.91

Replaces

Test oil : ISO-4113

Combination no. : 0 401 876 297F

Injection pump

Pump designation : PE6P110A320RS385-1F

EP type number : 0 411 816 146

Governor

Governor design. : RSV250...750P7A507 Governer no. : 0 421 833 185

: 0763398 Cust. part no.

Customer-spec. information Customer : DAF

: DK 1160 A(1500) Engine

#### TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

# BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 : (2.75...2.95) Prestroke mm

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 11.00...11.20

Del.quantity cm3/: 13.8...14.0

100 s: (13.6...14.3)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 250.0 2nd speed Rack travel in mm: 6.8...7.0 Del.quantity cm3/: 2.5...3.3

100 s: (2.2...3.5)

cm3 : 0.4 100 s: (0.7) Spread

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

: 138.5...140.5 Del.quantity 1000 : (136.0...143.0)

Spread : 4.00 cm3

1000 : (7.50)

# RATED SPEED

1st version Control lever

position degrees: 90...98

Testing:

1st rack travel in: 10.00

Speed rpm: 750...755
2nd rack travel in: 4.00
Speed rpm: 780...795
4th rack travel in: 950

rpm : 0.30...1.40Speed

LOW IDLE 1

Control lever

position degrees: 65...73

Setting point w/out bumper spring

: 250 rom Rack travel in mm: 6.9 : 250 Speed rpm

Rack travel in mm : 6.80...7.00 Rack travel in mm : 2.00

Speed rpm : 265...325

SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00

## **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 10.00 rpm : 750...755 Speed

## LOW IDLE

Speed rpm : 250 Rack travel in mm : 6.80...7.00 Del.quantity cm3/: 25.0...33.0 1000 s: (22.5...35.5)

cm3 : 4.50Spread 1000 s: (7.50)

Remarks:

# **APPLICATION**

Generator

Note remarks

: DAF 11,6t31 Test sheet : 24.04.91 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 401 876 297.1

Injection pump

Pump designation : PE6P110A320RS385-1J

: 0 411 816 146 EP type number

Governor

Governor design. : RSV250...750P7A507

: 0 421 833 185 Governer no.

: 0376290 Cust. part no.

Customer-spec. information Customer

Engine : DKTD 1160(1500)

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1-5- 3- 6- 2- 4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm : 7001st speed

Rack travel in mm : 11.20...11.40

Del.quantity cm3/: 14.1...14.3

100 s: (13.8...14.5)

cm3 : 0.4Spread

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm: 6.8...7.0 Del.quantity cm3/: 2.5...3.3

100 s: (2.2...3.5)

Spread cm3 : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

: 141.0...143.0 Del.quantity 1000 : (138.5...145.5)

: 4.00 cm3 Spread

1000 : (7.50)

RATED SPEED

1st version Control lever

position degrees: 90...98

Testing:

1st rack travel in: 10.20

rpm : 750...755 Speed

2nd rack travel in: 4.00

: 780...795 Speed rom

4th rack travel in: 950

Speed rpm : 0.30...1.40

**CO5** 

LOW IDLE 1 Control lever

position degrees: 66...74

Setting point w/out bumper spring

Speed rpm : 250 Rack travel in mm : 6.9 Speed rpm : 250

Speed rpm : 250
Rack travel in mm : 6.80...7.00
Rack travel in mm : 2.00
Speed rpm : 265...325

SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00

## **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 10.20 rpm : 750...755 Speed

# LOW IDLE

Speed rpm : 250
Rack travel in mm : 6.80...7.00
Del.quantity cm3/ : 25.0...33.0
1000 s: (22.5...35.5)

cm3 : 4.50Spread

1000 s: (7.50)

Remarks:

# APPLICATION

Generator

### Note remarks

: DAF 11,6t32 Test sheet : 24.04.91 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 401 876 297U

Injection pump

Pump designation : PE6P110A320RS385-1U

: 0 411 816 146 EP type number

Governor

Governor design. : RSV250...750P7A507

: 0 421 833 185 Governer no.

: 0290317 Cust. part no.

Customer-spec. information Customer : DAF

Engine : DKA 1160(1500)

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 : (2.75...2.95) Prestroke mm

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 11.10...11.30

Del.quantity cm3/: 14.0...14.2

100 s: (13.8...14.5)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 250.0 2nd speed Rack travel in mm : 6.8...7.0 Del.quantity cm3/ : 2.5...3.3

100 s: (2.2...3.5)

cm3 : 0.4Spread

100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Speed Rack travel in mm: 0.30...0.70

Governor spring pre-tension

Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

: 140.5...142.5 Del.quantity

1000 : (138.0...145.0)

: 4.00 Spread cm3

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 90...98

Testing:

1st rack travel in: 10.10

Speed rpm : 750...755

2nd rack travel in: 4.00

Speed rpm : 780...795

4th rack travel in: 950

Speed rpm : 0.30...1.40

**CO7** 

LOW IDLE 1 Control lever

position degrees: 65...73

Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 6.9
Speed rpm : 250
Rack travel in mm : 6.80...7.00
Rack travel in mm : 2.00
Speed rpm : 265...325

SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00

#### BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.10 rpm : 750...795 Speed

# LOW IDLE

Speed rpm : 250
Rack travel in mm : 6.80...7.00
Del.quantity cm3/ : 25.0...33.0
1000 s: (22.5...35.5)
Spread cm3 : 4.50

1000 s: (7.50)

Remarks:

## **APPLICATION**

Generator

## Note remarks

Test sheet : DAF 11,6t23 Edition : 24.04.91

Replaces

Test oil : ISO-4113

Combination no. : 0 401 876 297Y

Injection pump

Pump designation : PE6P110A320RS385-1Y

EP type number : 0 411 816 146

Governor

Governor design. : RSV250...750P7A507

: 0 421 833 185 Governer no.

: 0290321 Cust. part no.

Customer-spec. information Customer

: DKTD 1160(1500) Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 11.80...12.00

Del.quantity cm3/: 15.2...15.4

100 s: (14.9...15.6)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm: 6.8...7.0

Del.quantity cm3/: 2.5...3.3 100 s: (2.2...3.5)

cm3 : 0.4Spread

100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

: 152.0...154.0 Del.quantity

1000 : (149.5...156.5) : 4.00

Spread cm3

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 90...98

Testing:

1st rack travel in: 10.80

Speed rpm : 750...755

2nd rack travel in: 4.00

rpm : 780...795 Speed

4th rack travel in: 950

rpm : 0.30...1.40 Speed

009

LOW IDLE 1 Control lever

position degrees: 66...74

Setting point w/out bumper spring

: 250 Speed rpm Rack travel in mm: 6.9

Rack travel in mm : 250
Rack travel in mm : 6.80...7.00
Rack travel in mm : 2.00
rpm : 265...325

SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00

# **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 10.80 speed rpm : 750...755 Speed

# LOW IDLE

Speed rpm : 250

Rack travel in mm : 6.80...7.00 Del.quantity cm3/: 25.0...33.0 1000 s: (22.5...35.5) Spread cm3: 4.50

1000 s: (7.50)

# Remarks:

## APPLICATION

Generator

Note remarks

Test sheet : DAF 11,6t34 Edition : 24.04.91

Replaces Test oil : ISO-4113

Combination no. : 0 401 876 2987

Injection bumb

Pump designation : PE6P120A320RS385-2Z

EP type number : 0 411 826 132

Governor

: RSV250...750P7A507 Governor design.

Governer no. : 0 421 833 185

: 0387874 Cust. part no.

Customer-spec. information Customer : DAF

Engine : DKX1160ATi(1500)

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 10.50...10.60

Del.quantity cm3/: 20.7...20.9

100 s: (20.4...21.2)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 250.0 2nd speed Rack travel in mm: 4.9...5.1 Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...0.70

Governor spring pre-tension

Click setting x : 3.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

Del.quantity

: 207.5...209.5 : (204.5...212.5) 1000

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 90...98

Testing:

1st rack travel in: 9.50

rpm : 750...755 Speed

2nd rack travel in: 4.00

rpm : 780...795 Speed 4th rack travel in: 950 rpm : 0.30...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 63...71 Setting point w/out bumper spring

Speed rpm : 250° Rack travel in mm: 5.0 Speed rpm : 250 Rack travel in mm : 4.90...5.10

Rack travel in mm : 2.00

: 235...295 Speed rom

SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00

## **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 9.50 Speed rpm : 750...755

# LOW IDLE

rpm : 250 Speed

Rack travel in mm : 4.90...5.10 Del.quantity cm3/: 14.0...20.0 1000 s: (11.0...23.0)

Spread cm3 : 8.00

1000 s: (12.00)

#### Remarks:

## APPLICATION

Generator

#### Note remarks

Test sheet : DAF 11,8 u8 Edition : 24.04.91

Replaces Test oil : ISO-4113

Injection pump

Combination no.

Pump designation : PE6P110A720RS441Z EP type number : 0 411 816 148

Governor

Governor design. : RSV250...1200P5A509

: 0 421 833 190 Governer no.

Cust. part no. : 0395173

Customer-spec. information Customer : DAF

Engine : DHS 825

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

: 0 401 876 301z

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 11.90...12.00

Del.quantity cm3/: 12.8...13.0

100 s: (12.6...13.3)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 250.0 Rack travel in mm : 5.0...5.2 Del.quantity cm3/ : 0.7...1.2

100 s: (0.4...1.4)

cm3 : 0.4Spread 100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 6.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

. rpm : 1000 Speed Aneroid pressure h: 700

: 128.5...130.5 Del.quantity 1000 : (126.0...133.0)

: 4.00 Spread cm3

: (7.50) 1000

RATED SPEED

1st version

Control lever

position degrees: 50...58

Testing:

1st rack travel in: 10.90

rpm : 1220...1230 Speed

2nd rack travel in: 4.00

: 1300...1330 Speed rom

3rd rack travel in: 4.00

: 1330...1360 Speed rom

4th rack travel in: 1500

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 18...26

Setting point w/out bumper spring

rpm : 250 Rack travel in mm: 4.6

Speed rpm : 250
Rack travel in mm : 5.00...5.20
Rack travel in mm : 2.00

: 560...620 Speed rpm

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000 Rack travel in m: 12.10...12.20 2nd speed rpm : 400

Rack travel in m: 12.10...12.30 3rd speed rpm : 300

Rack travel in m: 12.30...12.80

Aneroid/Altitude Compensator Test

1st version

Setting

: 600 Speed rpm hPa : 700 Pressure

Rack travel mm : 11.90...12.00

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 10.10...10.30

2nd pressure hPa : 360

Rack travel in m: 11.40...11.50

3rd pressure hPa : 280

Rack travel in m: 10.60...11.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 600 Del.quantity cm3/ : 86.5...88.5

1000 s: (84.0...91.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 10.90

rpm : 1220...1230 Speed

C14

# STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 245.0...285.0 1000 s: (241.0...289.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 5.00...5.20
Del.quantity cm3/ : 7.0...12.0
1000 s: (4.5...14.5)

cm3 : 4.50Spread

1000 s: (7.50)

Remarks:

#### Note remarks

Test sheet : DAF 11,6 w2 Edition : 24.04.91

Replaces

Test oil : ISO-4113

Combination no. : 0 401 876 303W

Injection pump

Pump designation : PE6P100A320RS384-1W

EP type number : 0 411 806 189

Governor

Governor design. : RSV250...1100P5A510

Governer no. : 0 421 833 191

: 0763400 Cust. part no.

Customer-spec. information Customer : DAF

Engine : DK 1160 M

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.20...3.30 Prestroke mm

: (3.15...3.35)

Rack travel in mm : 9.00...12.00

Firing order : 1-5- 3- 6- 2- 4

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 600 1st speed

Rack travel in mm : 10.90...11.00

Del.guantity cm3/: 10.0...10.2

100 s: (9.8...10.4)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 250.0 Rack travel in mm : 7.2...7.4 Del.quantity cm3/: 1.2...1.6

100 s: (0.9...1.8)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Del.quantity : 100.0...102.0

1000 : (98.0...104.0)

: 3.50 cm3 Spread

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 96...104

Testing:

1st rack travel in: 9.90

rpm : 1125...1135 Speed

2nd rack travel in: 4.00

Speed rpm : 1175...1205

3rd rack travel in: 4.00

: 1260...1290 Speed rpm

4th rack travel in: 1400

rpm : 0.30...1.40Speed

LOW IDLE 1 Control lever

position degrees: 67...75 Setting point w/out bumper spring

: 250 Speed rpm Rack travel in mm: 6.8

Speed rpm : 250 Rack travel in mm : 7.20...7.40

Rack travel in mm : 2.00 Speed rpm : 700...760

TORQUE CONTROL

Torque control curve - 1st version

rpm : 850 1st speed

Rack travel in m: 10.90...11.00

2nd speed rpm : 400

Rack travel in m: 11.10...11.20

3rd speed rpm : 300

Rack travel in m: 11.30...11.80

#### **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 9.90

rpm : 1125...1135 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 195.0...235.0

1000 s: (191.0...239.0)

Rack travel in mm: 19.50...21.00

LOW IDLE

Speed : 250 rpm

Rack travel in mm : 7.20...7.40 Del.quantity cm3/: 12.0...16.0 1000 s: (9.5...18.5) Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

#### Note remarks

Test sheet : DAF 11,6 w3 Edition : 24.04.91

Replaces

Test oil : ISO-4113

Combination no. : 0 401 876 303x

Injection pump

Pump designation : PE6P100A320RS384-1X

EP type number : 0 411 806 189

Governor

Governor design. : RSV250...1100P5A510

Governer no. : 0 421 833 191

Cust. part no. : 0763399

Customer-spec. information Customer : DAF

Engine : DK 1160 M

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30

: (3.15...3.35) Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 850 1st speed

Rack travel in mm : 10.30...10.40

Del.quantity cm3/: 9.0...9.2

100 s: (8.8...9.4)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0Rack travel in mm: 7.2...7.4 Del.quantity cm3/: 1.2...1.6 100 s: (0.9...1.8)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm : 800 Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Del.quantity : 90.0...92.0 1000 : (88.0...94.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 91...99

Testina:

1st rack travel in: 9.30

rpm : 1025...1035 Speed

2nd rack travel in: 4.00

rpm : 1075...1105 Speed

3rd rack travel in: 4.00

: 1160...1190 Speed rpm

4th rack travel in: 1300

rpm : 0.30...1.40Speed LOW IDLE 1 Control lever position degrees: 67...75 Setting point w/out bumper spring Speed rpm : 250 Rack travel in mm : 6.8

Speed rpm : 250

Rack travel in mm : 7.20...7.40

Rack travel in mm : 2.00

Speed rpm : 700...760 TORQUE CONTROL Torque control curve - 1st version rpm : 850 1st speed Rack travel in m: 10.30...10.40 2nd speed rpm : 400 Rack travel in m: 10.50...10.60 3rd speed rpm : 300 Rack travel in m: 10.70...11.20 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.30 rpm : 1025...1035 Speed STARTING FUEL DELIVERY Speed : 100 nom Del.quantity cm3/: 195.0...235.0 1000 s: (191.0...239.0) Rack travel in mm : 19.50...21.00 LOW IDLE Remarks:

Note remarks

Test sheet : DAF 11,6k20 Edition : 24.04.91

Replaces

Test oil : ISO-4113

Combination no. : 0 401 876 308P

Injection pump

Pump designation: PE6P110A320RS372-1P

EP type number : 0 411 816 145

Governor

Governor design. : RSV250...1100P5A508-

3

Governer no. : 0 421 833 192

Cust. part no. : 0376298

Customer-spec. information

Customer : DAF

Engine : DKTD 1160 M

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

rest pressure, but the

Prestroke mm : 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

019

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

BASIC SETTING

1st speed rpm: 850

Rack travel in mm : 10.30...10.40

Del.quantity cm3/: 10.2...10.4

100 s: (9.9...10.6)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 250.0 Rack travel in mm : 7.0...7.2

Del.quantity cm3/: 0.9...1.4 100 s: (0.7...1.7)

Spread cm3: 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 850

Del.quantity : 102.0...104.0

1000 : (99.5...106.5)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version Control lever

position degrees: ?

Testing:

1st rack travel in: 9.30

Speed rpm : 1020...1030

2nd rack travel in: 4.00

Speed rpm : 1070...1100

3rd rack travel in: 4.00

Speed rpm : 1145...1175

4th rack travel in: 1350 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: ?

Setting point w/out bumper spring Speed rpm : 250

Rack travel in mm : 6.6 Speed rpm : 250 Rack travel in mm : 7.00...7.20

Rack travel in mm : 2.00 Speed rpm : 710...770

TORQUE CONTROL

Torque control curve - 1st version

rpm : 850 1st speed

Rack travel in m: 10.50...10.60

: 400 2nd speed rpm

Rack travel in m: 10.50...10.70

3rd speed : 300 rom

Rack travel in m: 10.80...11.30

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 9.30

rpm : 1020...1030 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 245.0...285.0

1000 s: (241.0...289.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 7.00...7.20
Del.quantity cm3/ : 9.5...14.5 1000 s: (7.0...17.0)

cm3 : 4.50Spread

1000 s: (7.50)

Remarks:

Note remarks

Test sheet : DAF 11,6k21 Edition : 24.04.91

Replaces

Test oil : ISO-4113

Combination no. : 0 401 876 308R

Injection pump

: PE6P110A320RS372-1R Pump designation

EP type number : 0 411 816 145

Governor

: RSV250...1100P5A508-Governor design.

Governer no. : 0 421 833 192

Cust. part no. : 0376302

Customer—spec. information Customer : DAF

Engine : DKTD 1160 M

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening .

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 : (2.75...2.95) Prestroke mm

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 850

Rack travel in mm : 11.00...11.10

Del.quantity cm3/: 11.7...11.9

100 s: (11.4...12.1)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 250.02nd speed Rack travel in mm: 7.0...7.2 Del.quantity cm3/: 0.9...1.4

100 s: (0.7...1.7) cm3 : 0.4 100 s: (0.7) Spread

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 850 : 117.0...119.0 Del.quantity : (114.5...121.5) 1000

: 4.00 cm3 Spread

1000 : (7.50)

RATED SPEED

1st version Control lever

position degrees: ?

Testina:

1st rack travel in: 10.00

rpm : 1120...1130 Speed

2nd rack travel in: 4.00

rpm : 1185...1215 Speed

3rd rack travel in: 4.00

Speed rpm : 1260...1290

4th rack travel in: 1450 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: ? Setting point w/out bumper spring rpm : 250 Soeed Rack travel in mm : 6.6
Speed rpm : 250
Rack travel in mm : 7.00...7.20
Rack travel in mm : 2.00
Speed rpm : 710...770 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 850 Rack travel in m: 11.20...11.30 2nd speed rpm : 400 Rack travel in m: 11.20...11.40 3rd speed rpm : 300 Rack travel in m: 11.40...11.90 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.00 rpm : 1120...1130 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity\_cm3/ : 245.0...285.0 1000 s: (241.0...289.0) Rack travel in mm : 19.50...21.00 LOW IDLE Speed rpm : 250 Rack travel in mm : 7.00...7.20 Del.quantity cm3/: 9.5...14.5 1000 s: (7.0...17.0) Spread cm3 : 4.50 1000 s: (7.50)

**C22** 

Remarks:

Note remarks

Test sheet : DAF 11,6k22 : 24.04.91 Edition

Replaces Test oil

: ISO-4113

Combination no. : 0 401 876 308T

Injection pump

Pump designation : PE6P110A320RS372-1T

EP type number : 0 411 816 145

Governor

Governor design. : RSV250...1100P5A508-

: 0 421 833 192 Governer no.

Cust. part no. : 0369662

Customer-spec. information Customer : DAF

: DKT 1160 M Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasina : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rom: 850

Rack travel in mm : 11.70...11.80

Del.quantity cm3/: 13.1...13.3

100 s: (12.8...13.5)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 250.0 2nd speed

Rack travel in mm : 6.6...6.8 Del.quantity cm3/: 0.7...1.2 100 s: (0.4...1.4)

cm3 : 0.4 Spread 100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 700

: 131.0...133.0 Del.quantity

1000 : (128.5...135.5)

: 4.00 Spread cm3

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: ?

Testing:

1st rack travel in: 10.70

rom : 990...1000 Speed

2nd rack travel in: 4.00

rpm : 1050...1080 Speed

3rd rack travel in: 4.00

rpm : 1125...1155 Speed 4th rack travel in: 1275

rpm : 0.30...1.40Speed

LOW IDLE 1 Control Lever

position degrees: 17...25 Setting point w/out bumper spring

rpm : 250 Speed Rack travel in mm: 6.2 : 250 Speed rom

Rack travel in mm : 6.60...6.80

Rack travel in mm : 2.00

Speed FDM : 640...700

TORQUE CONTROL

Torque control curve - 1st version

rpm : 850 1st speed

Rack travel in m: 11.90...12.00

rpm : 400 2nd speed

Rack travel in m: 11.90...12.10

3rd speed

rd speed rpm : 300 Rack travel in m: 12.10...12.60

Aneroid/Altitude Compensator Test

1st version Setting

: 600 Speed **COM** Pressure hPa : 700

: 11.70...11.80 Rack travel mm

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 11.40...11.50

2nd pressure hPa : 260

Rack travel in m: 11.50...11.70

FUEL DELIVERY CHARACTERISTICS

1st version

Ameroid pressure h: -

Speed rpm : 600 Del.quantity cm3/ : 135.0...137.0 1000 s: (132.5...139.5)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 10.70

Speed rpm : 990...1000 STARTING FUEL DELIVERY

LOW IDLE

Speed rpm : 250

Rack travel in mm : 6.60...6.80 Del.quantity cm3/: 7.0...12.0 1000 s: (4.5...14.5)

cm3 : 4.50Spread

1000 s: (7.50)

Remarks:

**C24** 

BOSCH INJ. PUMP TEST SPECIFICATIONS Firing order Note remarks : DAF 11,6k23 Test sheet : 24.04.91 Edition Replaces Test oil : ISO-4113 Combination no. : 0 401 876 308u Injection pump Pump designation : PE6P110A320RS372-1U EP type number : D 411 816 145 Governor Governor design. : RSV250...1100P5A508-: 0 421 833 192 Governer no. Spread Cust. part no. : 0369660 Customer-spec. information Customer : DAF Engine : DKA 1160 M TEST BENCH REQUIREMENTS Spread Test oil : 38...42 inlet temp. °C Α Overflow valve : 1 417 413 025 Speed Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Opening pressure, bar : 172...175 Speed Test lines : 1 680 750 015 Spread Outside diameter x Wall thickness x Length mm : 6.00x1.50x600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY Test pressure, bar: 25...27 : 2.80...2.90 Prestroke mm

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

: 0-60-120-180-240-300 Phasing Tolerance + - ° : 0.50 (0.75) BASIC SETTING rpm: 850 1st speed Rack travel in mm : 12.10...12.20 Del.quantity cm3/: 13.8...14.0 100 s: (13.5...14.2) cm3 : 0.4100 s: (0.7) 2nd speed rpm : 250.0 Rack travel in mm: 6.6...6.8 Del.quantity cm3/: 0.7...1.2 100 s: (0.4...1.4) cm3 : 0.4 100 s: (0.7) GUIDE SLEEVE POSITION Control-lever position Degree: -3 rpm : 800 Rack travel in mm : 0.30...0.70 Governor spring pre-tension Click setting x : 4.25FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 850 : 138.0...140.0 Del.quantity 1000 : (135.5...142.5) cm3 : 4.00 1000 : (7.50)RATED SPEED 1st version Testing: 1st rack travel in: 11.10 Speed rpm : 1140...1150 2nd rack travel in: 4.00 Speed : 1200...1230 rpm 3rd rack travel in: 4.00 : 1275...1305 Speed rpm 4th rack travel in: 1425 Speed rom : 0.30...1.40

: 1-5-3-6-2-4

LOW IDLE 1 Control Lever position degrees: 17...25 Setting point w/out bumper spring : 250 Speed rpm Rack travel in mm : 6.2 Speed rpm : 250 Rack travel in mm : 6.60...6.80 Rack travel in mm : 2.00 Speed npm : 640...700 TORQUE CONTROL Torque control curve - 1st version rpm : 850 1st speed

Rack travel in m: 12.30...12.40 2nd speed rpm : 400 Rack travel in m: 12.30...12.50

: 300 3rd speed **Lbu** Rack travel in m: 12.50...13.00

# BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.10 Speed rpm : 1140...1150

# STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 245.0...285.0 1000 s: (241.0...289.0)

Rack travel in mm : 19.50...21.00

# LOW IDLE

rpm : 250 Speed Rack travel in mm : 6.60...6.80 Del.quantity cm3/: 7.0...12.0 1000 s: (4.5...14.5)

cm3 : 4.50 Spread 1000 s: (7.50)

Remarks:

**C26** 

Note remarks

: DAF 11,6k24 Test sheet Edition : 24.04.91

Replaces

Test oil : ISO-4113

Combination no. : 0 401 876 308V

Injection pump

Pump designation : PE6P110A320RS372-1V

EP type number : 0 411 816 145

Governor

: RSV250...1100P5A508-Governor design.

: 0 421 833 192 Governer no.

Cust. part no. : 0369659

Customer spec. information Customer : DAF

Engine : DKA 1160 M

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

: 1 680 750 015 Test lines

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 : (2.75...2.95) Prestroke mm

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 850

Rack travel in mm : 11.80...11.90

Del.quantity cm3/: 13.2...13.4

100 s: (12.9...13.6)

cm3 : 0.4Spread

100 s: (0.7)

2nd speed rpm : 250.0 Rack travel in mm : 6.6...6.8 Del.quantity cm3/ : 0.7...1.2

100 s: (0.4...1.4)

cm3 : 0.4Spread

100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Del.quantity : 732.0....36.5)

: 4.00 Spread cm3

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: ?

Testing:

1st rack travel in: 10.80

Speed rpm : 990...1000 2nd rack travel in: 4.00

Speed rpm : 1050...1080 3rd rack travel in: 4.00

rpm : 1125...1155 Speed

C27

4th rack travel in: 1275 rpm : 0.30...1.40 Speed LOW IDLE 1 Control Lever position degrees: 17...25 Setting point w/out bumper spring : 250 rpm Rack travel in mm: 6.2 : 250 Speed rom Rack travel in mm : 6.60...6.80 Rack travel in mm : 2.00 Speed rom : 640...700 TORQUE CONTROL Torque control curve - 1st version rpm : 850 1st speed Rack travel in m: 12.00...12.10 rpm : 400 2nd speed Rack travel in m: 12.00...12.20 rpm : 300 3rd speed Rack travel in m: 12.20...12.70 BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.80 rpm : 990...1000 Speed STARTING FUEL DELIVERY Speed : 100 rpm Del.guantity cm3/: 245.0...285.0 1000 s: (241.0...289.0) Rack travel in mm : 19.50...21.00 LOW IDLE Speed rpm : 250 Rack travel in mm : 6.60...6.80 Del.quantity cm3/: 7.0...12.0 1000 s: (4.5...14.5) Spread cm3 : 4.501000 s: (7.50) Remarks:

Note remarks

Test sheet : DAF 11,6k25 Edition : 24.04.91

Replaces

Test oil : ISO-4113

Combination no. : 0 401 876 308W

Injection pump

Pump designation : PE6P110A320RS372-1W

EP type number : 0 411 816 145

Governor

: RSV250...1100P5A508-Governor design.

: 0 421 833 192 Governer no.

Cust. part no. : 0369658

Customer-spec. information Customer : DAF

: DK 1160 M Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

**Opening** 

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

D01

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 850 1st speed

Rack travel in mm : 10.50...10.60

Del.quantity cm3/: 10.4...10.6

100 s: (10.2...10.9)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 250.0 2nd speed Rack travel in mm: 6.6...6.8 Del.quantity cm3/: 0.7...1.2

100 s: (0.4...1.4)

cm3 : 0.4Spread

100 s: (0.7)

GUIDE SLEEVE POSITION Control-Lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Del.quantity : 104.5...106.5 1000 : (102.0...109.0)

cm3 : 4.00 Spread

1000 : (7.50)

RATED SPEED

1st version Control lever

position degrees: ?

Testing:

1st rack travel in: 9.50

rpm : 990...1000 Speed

2nd rack travel in: 4.00

: 1050...1080 Speed rpm

3rd rack travel in: 4.00

rpm : 1125...1155 Speed

4th rack travel in: 1275 rpm : 0.30...1.40Speed LOW IDLE 1 Control lever position degrees: 17...25 Setting point w/out bumper spring Speed rpm : 250 Rack travel in mm : 6.2 Speed rpm : 250 Rack travel in mm : 6.60...6.80 Rack travel in mm : 2.00 : 640...700 Speed riom TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 850 Rack travel in m: 10.70...10.80 2nd speed rpm : 400 Rack travel in m: 10.70...10.90 d speed rpm : 300 Rack travel in m: 10.90...11.40 3rd speed rpm **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.50 : 990...1000 Speed rpm STARTING FUEL DELIVERY LOW IDLE Speed rpm : 250 Rack travel in mm : 6.60...6.80 Del.quantity cm3/ : 7.0...12.0 1000 s: (4.5...14.5) cm3 : 4.50Spread 1000 s: (7.50) Remarks:

Note remarks

Test sheet : DAF 11,6k26 Edition : 24.04.91

Replaces

Test oil : ISO-4113

Combination no. : 0 401 876 308Y

Injection pump

Pump designation : PE6P110A320RS372-1Y

: 0 411 816 145 EP type number

Governor

Governor design. : RSV250...1100P5A508-

: 0 421 833 192 Governer no.

Cust. part no. : 0290286

Customer-spec. information Customer : DAF

Engine : DKA 1160

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

003

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 850

Rack travel in mm : 11.10...11.20

Del.quantity cm3/: 11.4...11.6

100 s: (11.2...11.9)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 250.0 2nd speed Rack travel in mm: 6.6...6.8 Del.quantity cm3/: 0.7...1.2

100 s: (0.4...1.4)

Spread cm3 : 0.4100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Speed rpm : 850

Del.quantity : 114.5...116.5 1000 : (112.0...119.0)

: 4.00 Spread cm3

1000 : (7.50)

RATED SPEED

1st version Control lever

position degrees: ? \*

Testing:

1st rack travel in: 10.10

Speed rpm : 1140...1150 2nd rack travel in: 4.00

rpm : 1200...1230 Speed

3rd rack travel in: 4.00

rpm : 1275...1305 Speed

4th rack travel in: 1380

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 17...25

Setting point w/out bumper spring

rpm : 250 Rack travel in mm: 6.2 rpm : 250 Speed

Rack travel in mm : 6.60...6.80

Rack travel in mm : 2.00 Speed : 640...700 rom

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 850

Rack travel in m: 11.30...11.40 2nd speed rpm : 400

Rack travel in m: 11.30...11.50 3rd speed rpm : 300 Rack travel in m: 11.50...12.00

#### **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 10.10

Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 245.0...285.0 1000 s: (241.0...289.0)

Rack travel in mm : 19.50...21.00

# LOW IDLE

: 250 rpm

Rack travel in mm : 6.60...6.80 Del.quantity cm3/: 7.0...12.0 1000 s: (4.5...14.5)

cm3 : 4.50Spread

1000 s: (7.50)

Remarks:

Note remarks

Test sheet : MB 11,0 z : 24.04.91 Edition : 17.9.90 Replaces Test oil : ISO-4113

Combination no. : 0 401 876 775

Injection pump

Pump designation : PE6P110A320LS3835-3

EP type number : 0 411 816 773

Governor

Governor design. : RSV350...1050P0A531-

: 0 421 833 343 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM 441

1st version kW : 160.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 0 681 343 009 assembly

Opening |

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10 : (3.95...4.15)

Rack travel in mm : 9.00...12.00

: 6-3-5-2-4-1 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 1030

Rack travel in mm : 13.60...13.70

Del.quantity cm3/: 13.8...14.0

100 s: (13.5...14.2)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 350.0

Rack travel in mm : 8.3...8.9 Del.quantity cm3/ : 1.2...1.8

100 s: (0.9...2.0)

cm3 : 0.4 100 s: (0.7) Spread

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1030

Del.quantity : 138.0...140.0 1000 : (135.5...142.5)

: 4.00 Spread cm3

1000 : (8,00)

RATED SPEED

1st version

Control lever

position degrees: 88...96

Testing:

005

1st rack travel in: 12.60 rpm : 1070...1080 Speed 2nd rack travel in: 4.00 rpm : 1130...1160 Speed 4th rack travel in: 1300 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 64...72 Setting point w/out bumper spring rpm : 350 Speed Rack travel in mm: 8.6 Testing: Speed rpm : 100 Minimum rack trave: 19.50
Speed rpm: 350
Rack travel in mm: 8.30...8.90
Rack travel in mm: 2.00
Speed rpm: 380...440 SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00 FUEL DELIVERY CHARACTERISTICS 1st version rpm : 750 Speed Del.quantity cm3/: 126.0...130.0 1000 s: (123.0...133.0) Spread cm3 : 6.00 1000 s: (8.00) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.60 rpm : 1070...1080 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0) Remarks: Observe VDT-I-420/120

Note remarks

: RVI 9,8 m : 24.04.91 Test sheet Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 046 344

Injection pump

Pump designation : PES6P120A320RS3277

: 0 412 026 747 EP type number

Governor

Governor design. : RQV275...1050PA995

: 0 421 813 929 Governer no.

Customer-spec. information Customer : RVI

Engine : MIDR 06 20 45

1st version kW : 222.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

**Opening** 

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60

: (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1-5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 600 1st speed

Rack travel in mm : 9.80...9.90

Del.quantity cm3/: 17.5...17.7

100 s: (17.2...18.0)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 275.0 2nd speed Rack travel in mm : 4.8...5.2

Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1130 : 8.20...8.40 travel mm rpm : 275 2nd speed travel mm : 0.70...1.10

: 500 3rd speed rpm

travel mm 3.50...4.10 : 750 4th speed rpm

5.30...5.70 travel mm 1450 5th speed rpm

travel mm : 11.00...12.00

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1125

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 1000

Del.quantity : 173.0...180.0)

cm3 : 5.00 1000 : (9.00) Spread RATED SPEED 1st version Control Lever position degrees: 296...304 Testing: 1st rack travel in: 8.80 rpm : 1125...1135 Speed 2nd rack travel in: 4.00 rpm : 1190...1220 Speed 4th rack travel in: 1350 Speed rom : 0.00...1.00LOW IDLE 1

Control Lever position degrees: 243...251

Testing: Speed rpm Minimum rack trave: 6.70 : 275 Speed rpm Rack travel in mm : 4.90...5.10

CONSTANT REGULATION rpm : 310...430 Speed

Aneroid/Altitude Compensator Test

1st version Setting Speed : 500 rpm Pressure hPa : 1000

Rack travel mm : 9.80...9.90

Measurement Speed 1/min: 500

1st pressure hPa : -

Rack travel in m: 8.00...8.20
2nd pressure hPa : 360
Rack travel in m: 9.20...9.30
3rd pressure hPa : 200

Rack travel in m: 8.40...8.60

START CUT-OUT

1/min: 195 (215) Speed

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 1000 : 1050 Speed rpm

Del.quantity cm3/: 175.0...181.0 1000 s: (172.0...184.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 112.0...114.0 1000 s: (109.0...117.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 8.80 rpm : 1125...1135 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm Del.quantity cm3/: 130.0...160.0 1000 s: (126.0...164.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : -4.60...-5.00 Del.quantity cm3/: 14.0...20.0 1000 s: (11.0...23.0)

cm3 : 8.00 Spread

1000 s: (12.00)

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

**800** 

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : RVI 9,8 e Edition : 24.04.91 : 18.2.91 Replaces Test oil : ISO-4113 Combination no. : 0 402 046 784 Injection pump Pump designation: PES6P120A320RS3139 : 0 412 026 718 EP type number Governor Governor design. : RQV275...1000PA728-2 : 0 421 813 599 Governer no. Customer-spec. information Customer : RVI Engine : MIDR 062045 E : 236.0 1st version kW : 2000 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 101 assembly Opening 1997 pressure, bar : 207...210 Orifice plate diameter mm : 0,8 Test lines : 1 680 750 008 Outside diameter x Wall thickness : 6.00X2.00X600 x Length mm (A) Injection pump setting values

Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.50...3.60 Prestroke mm : (3.45...3.65)

Rack travel in mm: 9.00...12.00

Firing order: 1-5-3-6-2-4 : 0-60-120-180-240-300 Phasing Tolerance + - ° : 0.50 (0.75) BASIC SETTING 1st speed rpm: 1000 Rack travel in mm : 11.20...11.30 Del.quantity cm3/: 16.0...16.2 100 s: (15.7...16.5) Spread cm3 : 0.5100 s: (0.9) rpm : 275.0 2nd speed Rack travel in mm : 5.2...5.6 Del.quantity cm3/: 3.2...3.6 100 s: (2.9...3.9) Spread cm3 : 0.8100 s: (1.2) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 250 travel mm : 0.90...1.10 : 450 2nd speed Libu : 3.30...3.70 travel mm 3rd speed : 800 rpm travel mm 5.60...6.00 4th speed 1000 rpm travel mm : 7.00...7.20 GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1170 Speed Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1000 Speed Aneroid pressure h: 1000 Del.quantity : 100.0...165.0) : 5.00 cm3 Spread 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 115...123

Testing:

1st rack travel in: 10.20

rpm : 1065...1075

2nd rack travel in: 4.00

rpm : 1180...1210 Speed

4th rack travel in: 1300

rpm : 0.00...1.00Speed

LOW IDLE 1

Control lever

position degrees: 64...72

Testing:

Speed rpm : 200 Minimum rack trave: 7.20

Speed rpm : 275 Rack travel in mm : 5.30...5.50

CONSTANT REGULATION

rpm : 230...320 Speed

Aneroid/Altitude Compensator Test

1st version

Settina

: 500 Speed rpm hPa : 1000 Pressure

: 11.20...11.30 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 8.00...8.40

2nd pressure hPa : 320
Rack travel in m: 10.50...10.60
3rd pressure hPa : 160

Rack travel in m: 9.10...9.30

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

rpm : 600

Del.quantity cm3/: 182.5...188.5 1000 s: (179.5...191.5)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 109.5...111.5

1000 s: (106.5...114.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.20

Speed rpm : 1065...1075

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 155.0...185.0 1000 s: (151.0...189.0)

LOW IDLE

Speed rpm : 275 Rack travel in mm : -5.60...-6.00

Del.quantity cm3/: 32.0...36.0 1000 s: (29.0...39.0)

cm3 : 8.00

Spread 1000 s: (12.00)

Remarks:

Start-of-delivery mark 9° cam angle

after start of delivery cyl. 1.

Note remarks

Test sheet : MB 11,7 a17 Edition : 26.04.91

Replaces

Test oil : ISO-4113

: 0 402 046 807 Combination no.

Injection pump

Pump designation : PES6P110A820LS3131

EP type number : 0 412 016 715

Governor

: RQV300...1100PA916 Governor design.

: 0 421 813 748 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M447

: 168.0 1st version kW Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 0 681 343 009 assembly

Opening |

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.30...4.40 Prestroke mm

: (4.25...4.45)

Rack travel in mm : 9.00...12.00 Firing order : 6-2-4-1-5-3

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm : 11.40...11.50

Del.quantity cm3/: 13.7...13.9

100 s: (13.4...14.1)

cm3 : 0.4Spread

100 s: (0.8)

2nd speed rpm : 300.0 Rack travel in mm : 7.6...7.8 Del.quantity cm3/ : 1.4...2.0 100 s: (1.1...2.3) Spread cm3 : 0.4

100 s: (0.8)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.10...1.40

rpm : 450 2nd speed

: 3.40...3.80 travel mm

: 1150 3rd speed rpm

: 7.90...8.30 travel mm

: 1225 4th speed rpm

: 9.10...9.70 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1160 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

: 137.0...139.0 Del.quantity 1000 : (134.5...141.5)

D11

Spread cm3 : 4.001000 : (8.00) RATED SPEED 1st version Control Lever position degrees: 114...122 Testing: 1st rack travel in: 10.40 rpm : 1140...1150 Speed 2nd rack travel in: 4.00 Speed rpm : 1195...1225 4th rack travel in: 1300 rpm : 0.00...1.00Speed LOW IDLE 1 Control Lever position degrees: 85...93 Testing: Speed rpm : 200 Minimum rack trave: 9.20 Speed rpm : 300 Rack travel in mm : 7.60...7.80 CONSTANT REGULATION rpm : 300...500 Speed START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version : 600 Speed rpm Del.quantity cm3/: 113.0...116.0 1000 s: (110.0...119.0) cm3 : 5.00 Spread 1000 s: (9.00) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.40 rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

D12

Remarks:

Speed rpm : 100 Del.quantity cm3/ : 130.0...150.0 1000 s: (126.0...154.0)

#### Note remarks

: MTU 19,9 f Test sheet Edition : 26.4.91

Replaces

Test oil : ISO-4113

Combination no. : 0 402 436 030

Injection pump

Pump designation: PE6ZW150/410/3RS61/2

EP type number : 0 412 456 002

Governor

Governor design. : RQUV300...750ZWA31L

: 0 422 408 012 Governer no.

Customer—spec. information Customer : MTU

### TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 40...45

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 443 022 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 027

Outside diameter x Wall thickness

: 8,00X2,00X1500 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_

# BEGINNING OF DELIVERY

Prestroke mm : 2.00...2.10

: (1.95...2.15)

Rack travel in mm : 12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - " : 0.50 (0.75)

# BASIC SETTING

rpm: 600 1st speed

Rack travel in mm: 18.00

Del.quantity cm3/: 57.7...58.7

100 s: (57.4...59.0)

Spread cm3 : 1.5

100 s: (2.2)

rpm : 600 2nd speed

Rack travel in mm: 6.00 Del.quantity cm3/: 9.8...11.8 100 s: (9.5...12.1) Spread cm3 : 1.0

100 s: (1.5)

3rd speed rpm : 200

Rack travel in mm : 6.00

Del.quantity cm3/: 1.6...3.6

100 s: (1.3...3.9)

Spread cm3 : 0.8100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: 82...88

Speed rpm : 750

Rack travel in mm : 17.5...18.5

## RATED SPEED

### 1st version

Setting point:

Speed rpm

Rack travel in mm: 18.0

Testing:

1st rack travel in: 17.00

rpm : 750...770 Speed

2nd rack travel in: 5.00 Speed rpm : 785...815

4th rack travel in: 810

rpm : 0.00...3.00Speed

LOW IDLE 1

Control lever

position degrees: 15.5...22.5

Testing:

Speed rpm Minimum rack trave: 13.00 : 350 Speed rpm

Rack travel in mm : 4.70...4.90

Rack travel in mm : 3.80

Speed rpm : 380...420 Rack travel in mm : <0.01 Speed rpm : 540

# **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 17.00 Speed rpm : 755...765

# Remarks:

Full-load delivery is set on engine according to engine test report.

D14

Note remarks

: MB 11,0 t : 26.04.91 : 30.11.90 Test sheet Edition Replaces Test oil : ISO-4113

Combination no. : 0 402 646 838

Injection pump

Pump designation : PE6P120A320LS7808 EP type number : 0 412 626 816

Governor

Governor design. : RQ300/1050PA762-4 Governer no. : 0 421 801 390

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M441 LA

1st version kW : 240.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

8.0: diameter mm

Test Lines : 1 680 750 075

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30 : (5.15...5.35) Rack travel in mm : 20.00...21.00 Firing order : 6-3-5-2-4-1

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 13.90...14.10

Del.quantity cm3/: 21.4...21.6

100 s: (21.1...21.9)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.0 2nd speed Rack travel in mm: 5.6...6.2

Del.quantity cm3/: 1.3...1.9

100 s: (1.0...2.2)

cm3 : 0.6Spread 100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2 rpm : 600

Rack travel in mm: 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 600 Speed Aneroid pressure h: 900

: 214.0...216.0 Del.quantity 1000 : (211.0...219.0)

: 5.00 cm3 Spread

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm Rack travel in mm: 20.0

Testing: 1st rack travel in: 13.80 Speed rpm : 1095...1110 2nd rack travel in: 4.00 rpm : 1155...1185 Speed 4th rack travel in: 1300 Speed rpm : 0.00...1.50LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 5.9 Testing: : 200 Speed rpm Minimum rack trave: 7.90 : 300 Speed rpm Rack travel in mm : 5.60...6.20 Rack travel in mm: 2.00 Speed : 380...420 rom TORQUE CONTROL Dimension a mm : 0.30 rpm : 1050 2nd speed Rack travel in m: 14.80...15.00 3rd speed rpm : 800 Rack travel in m: 15.00...15.20 Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 rpm hPa : 900 Pressure Rack travel mm : 13.90...14.10 Measurement 1/min: 600 Speed 1st pressure hPa : 300 Rack travel in m: 10.70...10.90 2nd pressure hPa : 550
Rack travel in m: 12.70...12.90
3rd pressure hPa : 1050 Rack travel in m: 14.00...14.10 \*
4th pressure hPa : 1150
Rack travel in m: 14.40...14.70 5th pressure hPa : Rack travel in m: 9.50...9.80 START CUT-OUT

1/min: 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 1450 rpm\_ : 1050 Speed Del.quantity cm3/: 231.0...234.0 1000 s: (228.0...237.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: 1450 Speed rpm Del.quantity cm3/: 237.0...241.0 1000 s: (234.0...244.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: -: 500 Speed rpm Del.quantity cm3/: 142.0...144.0 1000 s: (139.0...147.0) cm3 : 8.00Spread 1000 s: (12.0)

#### BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.80 Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 200.0...222.0 1000 s: (196.0...226.0)

Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

Speed

### Note remarks

: MB 11,0 t 2 : 26.04.91 : 19.3.91 Test sheet Edition Replaces : ISO-4113 Test oil

Combination no. : 0 402 646 843

Injection pump

Pump designation : PE6P12OA320LS7808 EP type number : 0 412 626 816

Governor

Governor design. : RQV300...1050PA797-2

: 0 421 813 614 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

: 0M441 LA Engine

1st version kW : 240.0 Rated speed : 2100

#### TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

: 8.00X2.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30 : (5.15...5.35) Rack travel in mm : 20.00...21.00 Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 13.90...14.10

Del.quantity cm3/: 21.4...21.6

100 s: (21.1...21.9)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300.0 2nd speed Rack travel in mm : 5.6...6.2 Del.quantity cm3/: 1.3...1.9

100 s: (1.0...2.2)

Spread cm3 : 0.6100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

: 1.20...1.40 travel mm

2nd speed rpm : 600 : 4.90...5.10 travel mm

3rd speed : 1075 rpm : 7.40...7.60 travel mm

: 1100 4th speed rpm

: 8.00...8.40 travel mm

5th speed : 1150 rpm

: 9.00...9.40 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1125 Speed

Rack travel in mm : 15.80...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Speed rpm : 600 Aneroid pressure h: 900 : 214.0...216.0 Del.quantity 1000 : (211.0...219.0) cm3 : 5.00 1000 : (9.00) Spread RATED SPEED 1st version Control lever position degrees: 121...129 Testing: 1st rack travel in: 13.80 rpm : 1095...1110 2nd rack travel in: 4.00 rpm : 1170...1200 Speed 4th rack travel in: 1300 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 81...89 Testina: Speed rpm : 200 Minimum rack trave: 7.90 : 300 Speed rpm Rack travel in mm : 5.60...6.20 CONSTANT REGULATION rpm : 300...450 Speed TORQUE CONTROL Dimension a mm : 0.30 2nd speed rpm : 1050 Rack travel in m: 14.80...15.00 3rd speed rpm : 800 Rack travel in m: 15.00...15.20 th speed rpm : 700 4th speed Aneroid/Altitude Compensator Test 1st version Setting rpm : 600 Speed hPa : 900 Pressure : 13.90...14.10 Rack travel mm Measurement Speed 1/min: 600 1st pressure hPa : 300 Rack travel in m: 10.70...10.90 2nd pressure hPa : 550 Rack travel in m: 12.70...12.90

3rd pressure hPa : 1050 Rack travel in m: 14.00...14.10 \* 4th pressure hPa : 1150 Rack travel in m: 14.40...14.70 5th pressure hPa : -Rack travel in m: 9.50...9.80 START CUT-OUT Speed 1/min: 220 (240) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1450 : 1050 Speed rpm Del.quantity cm3/: 231.0...234.0 1000 s: (228.0...237.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: 1450 Speed rpm : 800 Del.quantity cm3/: 237.0...241.0 1000 s: (234.0...244.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: -: 500 Speed rpm Del.quantity cm3/: 142.0...144.0 1000 s: (139.0...147.0) cm3 : 8.00Spread 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 13.80 Speed rpm : 1095...1110 STARTING FUEL DELIVERY rpm : 100 Del.quantity cm3/: 200.0...220.0 1000 s: (196.0...224.0) Remarks: \* Increase in control-rod travel with respect to setting at least 0.1 mm

Note remarks

: MB 9,6 q : 03.05.91 Test sheet Edition : 14.12.90 Replaces Test oil : ISO-4113

Combination no. : 0 402 646 915

Injection pump

Pump designation : PE6P120A320LS7836 EP type number : 0 412 626 840

Governor

Governor design. : RQ300/1050PA972 : 0 421 801 542 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M401 LA

: 200.0 1st version kW Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.8

Test Lines : 1 680 750 075

Outside diameter x Wall thickness

: 8.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60

: (5.45...5.65) Rack travel in mm : 20.00...21.00

: 6-3-5-2-4-1 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 12.40...12.60

Del.guantity cm3/: 18.2...18.4

100 s: (17.9...18.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0Rack travel in mm : 5.5...5.8 Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.6Spread 100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 800

Del.quantity
1000 : 182.0...184.0

: (179.0...187.0) Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm Rack travel in mm: 20.0

Testing: 1st rack travel in: 12.10 Speed rpm : 1090...1105 2nd rack travel in: 4.00 rpm : 1165...1195 Speed 4th rack travel in: 1300 Speed rpm : 0.00...1.50LOW IDLE 1 Setting point w/out bumper spring : 300 Speed rpm Rack travel in mm: 5.6 Testing: Speed rpm Minimum rack trave: 7.50 rpm : 300 Speed Rack travel in mm : 5.50...5.80 Rack travel in mm: 2.00 rpm : 380...420 Speed Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rpm hPa : 800 Pressure Rack travel mm : 12.40...12.60 Measurement 1/min: 600 Speed 1st pressure hPa : 250 Rack travel in m: 12.20...12.40 2nd pressure hPa : 500 Rack travel in m: 11.60...11.80 3rd pressure hPa : 1000 Rack travel in m: 12.60...12.80 \* 4th pressure hPa : 1150 Rack travel in m: 12.90...13.10 5th pressure hPa : -Rack travel in m: 10.00...10.30 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1400 rpm : 1050 Del.quantity cm3/: 201.0...204.0 1000 s: (198.0...207.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: 1400 Speed : 300 CDIII Del.quantity cm3/: 202.0...206.0 1000 s: (199.0...209.0)

Spread cm3: 8.00 1000 s: (12.0) Aneroid pressure h: -Speed rpm: 500 Del.quantity cm3/: 122.0...124.0 1000 s: (119.0...127.0) Spread cm3: 8.00 1000 s: (12.0)

# BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.10 Speed rpm : 1090...1105

Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

#### Note remarks

Test sheet : MB 9.6 r Edition : 03.05.91 Replaces : 18.1.91 Test oil : ISO-4113

Combination no. : 0 402 646 916

Injection pump

Pump designation : PE6P120A320LS7836 EP type number : 0 412 626 840

Governor

Governor design. : RQV300...1050PA797-

17

Governer no. : 0 421 813 884

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M401 LA

1st version kW : 200.0 Rated speed : 2100

#### TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 105

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60

: (5.45...5.65) Rack travel in mm : 20.00...21.00

Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 12.40...12.60

Del.quantity cm3/: 18.2...18.4

100 s: (17.9...18.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 5.4...5.9

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5) Spread cm3 : 0.6

opread cms : 0.6 100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.00...1.50 2nd speed rpm : 600

travel mm : 4.80...5.30

3rd speed rpm: 820

travel mm : 5.90...6.40

4th speed rpm : 1107

travel mm : 8.30...8.80

5th speed rpm : 7183

travel mm : 9.80...10.30

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm: 1125

Rack travel in mm : 15.20...17.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Speed rpm : 600 Aneroid pressure h: 800 Aneroid F. Del.quantity 1000 : 182.0...184.0 : (179.0...187.0) : 5.00 cm3Spread 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 118...126 Testing: 1st rack travel in: 12.10 rpm : 1090...1100 Speed 2nd rack travel in: 4.00 rpm : 1165...1195 Speed 4th rack travel in: 1200 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 80...88 Testing: Speed rpm : 200 Minimum rack trave: 7.60 Speed rpm : 300 Rack travel in mm : 5.40...5.90 CONSTANT REGULATION rpm : 300...500 Speed Aneroid/Altitude Compensator Test 1st version Settina : 600 Speed rpm Pressure hPa : 800 : 12.40...12.60 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : 250 Rack travel in m: 10.20...10.40 2nd pressure hPa : 500 Rack travel in m: 11.60...11.80 3rd pressure hPa : 1000 Rack travel in m: 12.60...12.80 \* 4th pressure hPa : 1150

Rack travel in m: 12.90...13.10

Rack travel in m: 10.00...10.30

5th pressure hPa : -

START CUT-OUT 1/min: 240 (260) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1400 : 1050 Speed man Del.quantity cm3/: 201.0...204.0 1000 s: (198.0...207.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: 1400 : 800 Speed rpm Del.quantity cm3/: 202.0...206.0 1000 s: (199.0...209.0) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: -: 500 Speed rpm Del.quantity cm3/: 122.0...124.0 1000 s: (119.0...127.0) cm3 : 8.00Spread 1000 s: (12.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 12.10 rpm : 1090...1100 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 200.0...220.0 1000 s: (196.0...224.0) Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

Note remarks

: MB 9,6 o : 24.04.91 Test sheet Edition Replaces : 23.11.90 Test oil : ISO-4113

Combination no. : 0 402 646 917

Injection pump

Pump designation : PE6P120A320LS7834 EP type number : 0 412 626 841

Governor

Governor design. : RQ300/950PA971 : 0 421 801 543 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M401 LA Engine

: 230.0 1st version kW : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.50...5.60 Prestroke mm

: (5.45...5.65)

Rack travel in mm : 20.00...21.00 Firing order : 6-3-5-2-4-1 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

rpm: 600 1st speed

Rack travel in mm : 14.50...14.70

Del.quantity cm3/: 22.7...22.9

100 s: (22.4...23.2)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300.0 2nd speed

Rack travel in mm: 6.3...6.9

Del.quantity cm3/ : 1.6...2.2 100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1100

Aneroid ... Del.quantity 10<u>0</u>0 : 227.0...229.0 : (224.0...232.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

: 600 rpm

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.90

rpm : 990...1005

2nd rack travel in: 4.00

rpm : 1065...1095 Speed

4th rack travel in: 1200

Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm: 300 Rack travel in mm: 6.6

Testing:

Speed : 200 rpm Minimum rack trave: 8.50 : 300 Speed rpm

Rack travel in mm : 6.30...6.90

Rack travel in mm : 2.00

Speed : 380...420 MCT

TORQUE CONTROL

: 0.35 Dimension a mm : 950 2nd speed rpm

Rack travel in m: 14.90...15.10

3rd speed rpm : 800

Rack travel in m: 15.20...15.40

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 600 Pressure hPa : 1100

Rack travel mm : 14.50...14.70

Measurement

1/min: 600 Speed

1st pressure hPa : 300

Rack travel in m: 10.70...10.90

2nd pressure hPa : 700

Rack travel in m: 13.20...13.40

3rd pressure hPa : 1400

Rack travel in m: 14.60...14.80 \*

4th pressure hPa : 1550

Rack travel in m: 14.90...15.10

5th pressure hPa : -

Rack travel in m: 9.70...10.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1800 Speed rpm : 950

Del.quantity cm3/: 236.0...239.0

1000 s: (233.0...242.0)

Spread cm3 : 8.00

1000 s: (12.0) Aneroid pressure h: 1800

Speed rpm\_ : 800

Del.quantity cm3/: 243.0...247.0

1000 s: (240.0...250.0)

cm3 : 8.00 Spread 1000 s: (12.0)

Aneroid pressure h: rpm\_ : 500 Speed

Del.quantity cm3/: 122.0...124.0

1000 s: (119.0...127.0)

Spread cm3 : 8.00

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.90

rpm : 990...1005 Speed

Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

Note remarks

: MB 9,6 p : 24.04.91 : 7.1.91 Test sheet Edition Replaces Test oil : ISO-4113

Combination no. : 0 402 646 924

Injection pump

Pump designation : PE6P120A320LS7837 EP type number : 0 412 626 842

Governor

Governor design. : RQ300/950PA971-3 : 0 421 801 557 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M401 LA

1st version kW : 250.0 : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

**Opening** 

pressure, bar : 207...210

Orifice plate

diameter mm 3.0

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30 : (5.15...5.35) Rack travel in mm : 20.00...21.00 Firing order : 6-3-5-2-4-1

: 0-60-120-180-240-300 Phasina

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 600

Rack travel in mm: 14.70...14.90

Del.quantity cm3/: 23.3...23.5

100 s: (23.0...23.8)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 5.6...6.2 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6Spread

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1000 Dei.quantity

: 233.0...235.0 1000 : (230.0...238.0) cm3 : 5.00

Spread

1000 : (9.00)

RATED SPEED

1st version

Setting point:

: 600 Speed rpm : 600 Rack travel in mm : 20.0 Testing:

1st rack travel in: 14.50

rpm : 990...1005 Speed

2nd rack travel in: 4.00

Speed rpm : 1065...1095

4th rack travel in: 1200

Speed rom : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

rpm : 300 Speed

Rack travel in mm: 5.9

Testing:

Speed rpm

Minimum rack trave: 7.90 rpm : 300 Speed

Rack travel in mm: 5.60...6.20 Rack travel in mm: 2.00 Speed rpm: 380...420

TORQUE CONTROL

: 0.40 Dimension a mm

2nd speed

nd speed rpm : 950 Rack travel in m: 15.50...15.70

rpm : 800 3rd speed

Rack travel in m: 15.60...15.80

Aneroid/Altitude Compensator Test

1st version

Setting

: 600 Speed COM Pressure hPa : 1000

: 14.70...14.90 Rack travel mm

Measurement

1/min: 600 Speed

1st pressure hPa : 200

Rack travel in m: 10.00...10.20

2nd pressure hPa : 600
Rack travel in m: 13.50...13.70
3rd pressure hPa : 1250
Rack travel in m: 14.80...15.00 \*
4th pressure hPa : 1450

Rack travel in m: 15.40...15.60

5th pressure hPa : -

Rack travel in m: 9.30...9.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1800

Speed : 950 COM

1000 s: (12.0)

Del.quantity cm3/: 251.0...254.0 1000 s: (248.0...257.0)

Spread cm3 : 8.00

Aneroid pressure h: 1800

Speed rpm : 800 Del.quantity cm3/ : 250.0...254.0 1000 s: (247.0...257.0)

cm3 : 8.00Spread

1000 s: (12.0) Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 135.0...137.0 1000 s: (132.0...140.0)

cm3 : 8.00 Spread

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.50

Speed rpm : 990...1005

Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

Note remarks

: MB 9,6 o 1 : 24.04.91 : 27.2.91 Test sheet Edition Replaces Test oil : ISO-4113

Combination no. : 0 402 646 926

Injection pump

Pump designation : PE6P120A320LS7834 EP type number : 0 412 626 841

Governor

Governor design. : RQV300...950PA797-19

: 0 421 813 901 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

Engine : 0M401 LA

1st version kW : 230.0 : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter

x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.50...5.60 Prestroke mm

: (5.45...5.65) Rack travel in mm : 20.00...21.00

: 6-3-5-2-4-1 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - \* : 0.50 (0.75)

Time to cyl. no.

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.70...14.90

Del.quantity cm3/: 22.9...23.1

100 s: (22.6...23.4)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 6.3...6.9 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

travel mm 1.00...1.50 2nd speed 617 rpm

travel mm 5.00...5.50

3rd speed 780 rpm travel mm

6.10...6.60 4th speed : 1009

ron

8.30...8.80 travel mm

: 1092 5th speed rpm

: 9.80...10.30 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1020

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version rpm : 600 Speed Aneroid pressure h: 1100 : 229.0...231.0 Del.quantity 1000 : (226.0...234.0) cm3 : 5.00 Spread 1000 : (9.00) RATED SPEED 1st version Control Lever position degrees: 118...126 Testing: 1st rack travel in: 13.90 rpm : 990...1000 Speed 2nd rack travel in: 4.00 : 1090...1120 Speed וויסריו 4th rack travel in: 1200 Speed rpm : 0.00...1.00 LOW IDLE 1 Control lever position degrees: 82...90 Testing: Speed : 200 COM Minimum rack trave: 8.50 rpm : 300 Rack travel in mm : 6.50...7.10 CONSTANT REGULATION Speed nom : 300...500 TORQUE CONTROL 2nd speed rpm : 950 Rack travel in m: 14.90...15.10 3rd speed rpm : 800 Rack travel in m: 15.30...15.50 Aneroid/Altitude Compensator Test 1st version Settina Speed : 600 rom Pressure hPa : 1100 Rack travel mm : 14.50...14.70 Measurement 1/min: 600 Speed 1st pressure hPa : 300 Rack travel in m: 10.70...10.90 2nd pressure hPa : 700 Rack travel in m: 13.20...13.40 3rd pressure hPa : 1400 Rack travel in m: 14.60...14.80 \*

4th pressure hPa : 1550 Rack travel in m: 14.90...15.10 5th pressure hPa : -Rack travel in m: 9.70...10.00 START CUT-OUT Speed 1/min : 240 (260) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1800 Speed : 950 rpm Del.guantity cm3/: 234.0...237.0 1000 s: (231.0...240.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: 1800 Speed rpm Del.quantity cm3/: 243.0...247.0 1000 s: (240.0...250.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 122.0...124.0 1000 s: (119.0...127.0) Spread cm3 : 8.001000 s: (12.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 13.90 Speed rom : 990...1000 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 210.0...230.0 1000 s: (206.0...234.0) Remarks: \* Increase in control-rod travel with respect to setting at least 0.1 mm

Note remarks

: MB 9,6 0 3 Test sheet : 26.04.91 Edition Replaces : 1.3.91 Test oil : ISO-4113

Combination no. : 0 402 646 929

Injection pump

Pump designation : PE6P120A320LS7834 EP type number : 0 412 626 841

Governor

Governor design. : RQV300...1050PA797-

25

: 0 421 813 924 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M401 LA Engine

: 230.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0.8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

 ∠ Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.50...5.60 Prestroke mm

: (5.45...5.65) Rack travel in mm : 20.00...21.00

Firing order : 6-3-5-2-4-1

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.70...14.90

Del.quantity cm3/: 22.9...23.1

100 s: (22.6...23.4)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.02nd speed

Rack travel in mm: 6.5...7.1 Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.6Spread 100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rom : 300

: 1.00...1.50 travel mm

2nd speed rpm : 608

: 4,80...5.30 travel mm

3rd speed 820 mgn

: 5.90...6.40 : 1108 travel mm

4th speed rpm

travel mm : 8.30...8.80

: 1183 5th speed rom

: 9.80...10.30 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1085

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version rpm : 600 Speed Aneroid pressure h: 1100 Del.quantity : 229.0...231.0 1000 : (226.0...234.0) cm3 : 5.00 Spread 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 120...128 Testina: 1st rack travel in: 13.90 rpm : 1090...1100 Speed 2nd rack travel in: 4.00 Speed rpm : 1190...1220 4th rack travel in: 1300 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 87...92 Testing: Speed : 200 rpm Minimum rack trave: 8.70 ren : 300 Rack travel in mm : 6.50...7.10 CONSTANT REGULATION rpm : 300...450 Speed TORQUE CONTROL : 0.40 Dimension a mm rpm : 1050 2nd speed Rack travel in m: 14.90...15.10 3rd speed rpm : 800 Rack travel in m: 15.30...15.50 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rpm hPa : 1100 Pressure : 14.70...14.90 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : 300 Rack travel in m: 10.90...11.10 2nd pressure hPa : 700 Rack travel in m: 13.40...13.60

3rd pressure hPa : 1400 Rack travel in m: 14.90...15.00 4th pressure hPa : 1550 Rack travel in m: 15.10...15.30 5th pressure hPa : Rack travel in m: 9.70..10.00 START CUT-OUT 1/min : 240 (260) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1800 : 1050 Speed rpm Del.quantity cm3/: 234.0...237.0 1000 s: (231.0...240.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: 1800 : 800 Speed rpm Del.quantity cm3/: 243.0...247.0 1000 s: (240.0...250.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm Del.quantity cm3/: 122.0...124.0 1000 s: (119.0...127.0) cm3 : 8.00Spread 1000 s: (12.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 13.90 rpm : 1090...1100 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 220.0...240.0 1000 s: (216.0...244.0) Remarks:

Note remarks

: MB 9,6 o 4 : 26.04.91 Test sheet **Edition** Replaces : 19.3.91 Test oil : ISO-4113

: 0 402 646 930 Combination no.

Injection pump

Pump designation : PE6P120A320LS7834 EP type number : 0 412 626 841

Governor

Governor design. : RQ300/1050PA972-7 Governer no. : 0 421 801 583

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M401 LA

1st version kW : 230.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Openina

: 207...210 pressure, bar

Orifice plate

: 0,8 diameter mm

Test Lines : 1 680 750 075

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.50...5.60 Prestroke mm

: (5.45...5.65)

Rack travel in mm : 20.00...21.00

Firing order : 6-3-5-2-4-1

: 0-60-120-180-240-300 Phasina

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

rpm: 600 1st speed

Rack travel in mm : 14.70...14.90

Del.quantity cm3/: 22.9...23.1

100 s: (22.6...23.4)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300.02nd speed Rack travel in mm: 6.5...7.1

Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.6Spread 100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

Speed rpm : 600 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 600 Speed

Aneroid pressure h: 1100

: 229.0...231.0 Del.quantity 1000 : (226.0...234.0)

cm3 : 5.00 Spread

1000 : (9.00)

RATED SPEED

1st version

Setting point:

rpm Rack travel in mm : 20.0

Testina: 1st rack travel in: 13.90 Speed : 1090...1105 rpm 2nd Pack travel in: 4.00 rpm : 1180...1210 Speed 4th rack travel in: 1300 rpm : 0.00...1.50Speed LOW IDLE 1 Setting point w/out bumper spring Speed rpm Rack travel in mm: 6.8 Testing: : 200 Speed rpm Minimum rack trave: 8.70 : 300 nom Rack travel in mm : 6.50...7.10 Rack travel in mm: 2.00 : 380...420 Speed rom TORQUE CONTROL Dimension a mm : 1050 2nd speed rpm Rack travel in m: 14.90...15.10 : 800 3rd speed rpm Rack travel in m: 15.30...15.50 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed ngn Pressure hPa : 1100 Rack travel mm : 14.70...14.90 Measurement 1/min: 600 Speed 1st pressure hPa : 300 Rack travel in m: 10.90...11.10 2nd pressure hPa : 700 Rack travel in m: 13.40...13.60 3rd pressure hPa : 1400 Rack travel in m: 14.80...15.00 \* 4th pressure hPa : 1550 Rack travel in m: 15.10...15.30 5th pressure hPa : -Rack travel in m: 9.70...10.00 FUEL DELIVERY CHARACTERISTICS

1000 s: (12.0)

# BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.90 Speed rpm : 1090...1105

# Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

Speed

1st version

Aneroid pressure h: 1800

rpm

: 1050

### Note remarks

Test sheet : MB 11,1 b 1 Edition : 24.04.91 : 27.2.91 Replaces Test oil : ISO-4113

Combination no. : 0 402 646 931

Injection pump

Pump designation : PE6P120A320LS7837 EP type number : 0 412 626 842

Governor

Governor design. : RQV300...1050PA797-

: 0 421 813 911 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M441 LA Engine

: 250.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35) Rack travel in mm : 20.00...21.00

: 6-3-5-2-4-1 Firing order

Phasing : 0-60-120-180-240-300

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.70...14.90

Del.quantity cm3/: 23.4...23.6

100 s: (23.1...23.9)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.02nd speed Rack travel in mm: 5.6...6.2 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6Spread 100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm 1.00...1.50

2nd speed 608 rpm

travel mm : 4.80...5.30 3rd speed : 820 rpm

travel mm : 5.90...6.40

: 1108

4th speed rpm

: 8.30...8.80 travel mm

: 1280 5th speed rpm

travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1100 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Speed rpm : 600 Aneroid pressure h: 1000 : 234.0...236.0 1000 : (231.0...239.0) cm3 : 5.00 1000 : (9.00) Del.quantity Spread RATED SPEED 1st version Control lever position degrees: 118...126 Testina: 1st rack travel in: 13.90 rpm : 1090...1105 Speed 2nd rack travel in: 4.00 Speed rpm: 1165...1195 4th rack travel in: 1300 Speed Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 81...89 Testing: Speed rpm Minimum rack trave: 7.70 rpm : 300 Rack travel in mm : 5.60...6.20 CONSTANT REGULATION rpm : 300...550 Speed TORQUE CONTROL Dimension a mm : 0.60 : 1050 2nd speed rpm Rack travel in m: 14.90...15.10 : 800 3rd speed rpm Rack travel in m: 15.50...15.70 Aneroid/Altitude Compensator Test 1st version Setting rpm : 600 hPa : 1000 Speed Pressure : 14.70...14.90 Rack travel mm Measurement Speed 1/min: 600 1st pressure hPa : 200 Rack travel in m: 10.00...10.20 2nd pressure hPa : 600

Rack travel in m: 13.50...13.70

3rd pressure hPa : 1250 Rack travel in m: 14.80...15.00 \* 4th pressure hPa : 1400 Rack travel in m: 15.30...15.50 5th pressure hPa : -Rack travel in m: 9.30...9.50 START CUT-OUT Speed 1/min: 220 (240) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1800 : 1050 Speed rpm Del.quantity cm3/: 235.0...238.0 1000 s: (232.0...241.0) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: 1800 Speed rpm : 800 Del.quantity cm3/ : 248.0...252.0 1000 s: (245.0...255.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: -: 500 Speed rpm Del.quantity cm3/: 135.0...137.0 1000 s: (132.0...140.0) cm3 : 8.00 Spread 1000 s: (12.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 13.90 rpm : 1090...1105 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 220.0...240.0 1000 s: (216.0...244.0) Remarks: \* Increase in control-rod travel with respect to setting at least 0.1 mm

### Note remarks

: DAF 8,7 a : 03.05.91 Test sheet Edition : 1.3.91 Replaces Test oil : ISO-4113

: 0 402 646 932 Combination no.

Injection pump

Pump designation : PE6P120A320RS7228 EP type number : 0 412 626 845

Governor

Governor design. : RQV275...1150PA986

: 0 421 813 920 Governer no.

Customer-spec. information Customer : DAF

: RS 222 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Opening |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30 : (5.15...5.35)

Rack travel in mm: 14.20...15.20

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 5.50...5.70 & maximum rack tra: 14.2...15.2 Difference ° CS : 3.25...4.75

BASIC SETTING

rpm: 1000 1st speed

Rack travel in mm : 14.70...14.80

Del.quantity cm3/: 17.7...17.9

100 s: (17.4...18.2)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 275.02nd speed Rack travel in mm : 6.6...6.8

Del.quantity cm3/: 1.3...1.9

100 s: (1.0...2.2)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 275 1st speed

: 1.20...1.60 travel mm : 315

2nd speed rpm

travel mm : 1.80...2.20 3rd speed : 1205 rpm

: 8.10...8.50 travel mm

rpm : 1340 4th speed

: 9.70...9.90 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1250

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed Aneroid pressure h: 1000

Del.quantity : 177.0...179.0 1000 : (174.0...182.0)

: 5.00 cm3 Spread 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 116...124

Testing:

1st rack travel in: 13.70

rpm : 1190...1200 Speed

2nd rack travel in: 4.00

rpm : 1320...1350 Speed

4th rack travel in: 1450

Speed rpm : 0.00...1.40

LOW IDLE 1 Control lever

position degrees: 79...87

Testing:

Speed rpm : 100 Minimum rack trave: 7.10 Speed rpm : 275 Rack travel in mm : 5.50...5.70

CONSTANT REGULATION

rom: 315...365 Speed

Aneroid/Altitude Compensator Test

1st version Setting

rpm : 600 Speed hPa : 1000 Pressure

Rack travel mm : 14.70...14.80

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 12.60...12.80 2nd pressure hPa : 470

Rack travel in m: 13.90...14.00 3rd pressure hPa : 350

Rack travel in m: 13.00...13.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 600 Del.quantity cm3/ : 131.0...133.0 1000 s: (128.0...136.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 13.70

rpm : 1190...1200 Speed

LOW IDLE

Speed rpm : 275 Rack travel in mm : 5.50...5.70

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

Note remarks

: DAF 8,7 b : 03.05.91 Test sheet Edition : 22.3.91 Replaces Test oil : ISO-4113

Combination no. : 0 402 646 933

Injection pump

Pump designation : PE6P120A320RS7228 EP type number : 0 412 626 845

Governor

Governor design. : RQ275/1150PA987 : 0 421 801 578 Governer no.

Customer-spec. information Customer : DAF

Engine : RS 222

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 105

Opening 1

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.8

Test lines : 1 680 750 089

Outside diameter

x Wall thickness

: 8.00x2.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35) Rack travel in mm : 14.20...15.20

Phasing : 0-60-120-180-240-300

: 1-5-3-6-2-4

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

Firing order

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 5.50...5.70 & maximum rack tra: 14.2...15.2 Difference ° CS : 3.25...4.75

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 14.70...14.80

Del.quantity cm3/: 17.7...17.9

100 s: (17.4...18.2)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 275.0 Rack travel in mm: 6.6...6.8 Del.quantity cm3/: 1.3...1.9

100 s: (1.0...2.2) cm3 : 0.8Spread

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 550 Speed

Rack travel in mm: 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 1000

Del.quantity : 177.0...179.0 1000 : (174.0...182.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 550 Rack travel in mm : 16.0

Testing:

1st rack travel in: 13.70 Speed rpm : 1175...1190 2nd rack travel in: 4.00

Speed rpm : 1260...1290 4th rack travel in: 1450

rpm : 0.00...1.40 Speed

LOW IDLE 1

Setting point w/out bumper spring

rpm Rack travel in mm: 5.6

Testing:

Speed rpm : 100 Minimum rack trave: 7.10

Speed rpm : 275
Rack travel in mm : 5.50...5.70
Rack travel in mm : 2.00

: 330...370 Speed nom

TORQUE CONTROL

Dimension a mm : -

Torque control curve - 1st version

1st speed rpm : 1000

Rack travel in m: 15.00...15.10 2nd speed rpm : 1150

Rack travel in m: 14.90...15.10

Aneroid/Altitude Compensator Test

1st version

Setting

rpm : 600 Speed hPa : 1000 Pressure

: 14.70...14.80 Rack travel mm

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 12.60...12.80

2nd pressure hPa : 470

Rack travel in m: 13.90...14.00

3rd pressure hPa : 350

Rack travel in m: 13.00...13.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 600 Del.quantity cm3/: 131.0...133.0

1000 s: (128.0...136.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 13.70

Speed rpm : 1175...1190

LOW IDLE

Speed rpm : 275 Rack travel in mm : 5.50...5.70

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

Note remarks

Test sheet : DAF 8,7 c Edition : 03.05.91 Replaces : 18.2.91 Test oil : ISO-4113

Combination no. : 0 402 646 934

Injection pump

Pump designation : PE6P120A320RS7229 EP type number : 0 412 626 844

Governor

Governor design. : RQ275/1150PA987 Governer no. : 0 421 801 578

Customer—spec. information Customer : DAF

Engine : RS 200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 105

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter x Wall thickness

x Length mm : 8.00X2.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35)

Rack travel in mm : 13.00...14.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - \circ : 0.50 (0.75)$ 

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 5.50...5.70 & maximum rack tra: 13.0...14.0 Difference ° CS : 3.25...4.75

HASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 13.50...13.60

Del.quantity cm3/: 16.3...16.5

100 s: (16.0...16.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0
Rack travel in mm : 6.1...6.3
Del.quantity cm3/: 1.3...1.9

100 s: (1.0...2.2) Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 550

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 1000

Del.quantity : 163.0...165.0 1000 : (160.0...168.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 550 Rack travel in mm : 16.0 Testing:

1st rack travel in: 12.50

Speed rpm : 1185...1200

2nd rack travel in: 4.00

Speed rpm : 1270...1300

4th rack travel in: 1450

Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

rpm : 275 Speed

Rack travel in mm: 5.6

Testing:

Speed rpm: 100
Minimum rack trave: 7.10
Speed rpm: 275
Rack travel in mm: 5.50...5.70
Rack travel in mm: 2.00
Speed rpm: 330...370

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

1st speed rpm : 1000

Rack travel in m: 13.80...13.90

2nd speed rpm : 1150

Rack travel in m: 13.70...13.90

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed : 600 mari

hPa : 1000 Pressure

: 13.50...13.60 Rack travel mm

Measurement

1/min : 600 Speed

1st pressure hPa : -

Rack travel in m: 11.70...11.90 2nd pressure hPa : 180 Rack travel in m: 12.60...12.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 600 Speed

Del.quantity cm3/: 117.0...119.0

1000 s: (114.0...122.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 12.50

Speed

rpm : 1185...1200

LOW IDLE

Speed rpm : 275 Rack travel in mm : 5.50...5.70

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

Note remarks

: DAF 8,7 d Test sheet : 03.05.91 Edition : 18.2.91 Replaces Test oil : ISO-4113

Combination no. : 0 402 646 935

Injection pump

Pump designation : PE6P120A320RS7229 : 0 412 626 844 EP type number

Governor

Governor design. : RQV275...1150PA986

: 0 421 813 920 Governer no.

Customer-spec. information Customer : DAF

Engine : RS 200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter x Wall thickness

x Length mm : 8.00X2.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm : (5.15...5.35)

Rack travel in mm : 13.00...14.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 5.50...5.70 & maximum rack tra: 13.0.. 14.0 Difference ° CS : 3.25...4.75

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.50...13.60

Del.quantity cm3/: 16.3...16.5

100 s: (16.0...16.8)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 275.0 2nd speed

Rack travel in mm: 6.1...6.3 Del.quantity cm3/: 1.3...1.9

100 s: (1.0...2.2)

cm3 : 0.8 Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 275

: 1.20...1.60 travel mm

rom : 315 2nd speed

: 1.80...2.20 travel mm

rpm : 1205 3rd speed

: 8.10...8.50 travel mm

4th speed : 1340 rpm

: 9.70...9.90 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1250

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000Aneroid pressure h: 1000

Del.quantity : 763.0...168.0)

cm3

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 116...124

Testing:

1st rack travel in: 12.50

rpm : 1190...1200 Speed

2nd rack travel in: 4.00

Speed rpm : 1305...1335

4th rack travel in: 1450

Speed rpm : 0.00...1.40

LOW IDLE 1 Control lever

position degrees: 79...87

Testing:

: 100 Speed rpm Minimum rack trave: 7.10 : 275 Speed rpm

Rack travel in mm : 5.50...5.70

CONSTANT REGULATION

rpm : 315...365 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 600 rpm Pressure hPa : 1000

Rack travel mm : 13.50...13.60

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 11.70...11.90 2nd pressure hPa : 180

Rack travel in m: 12.60...12.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 600 Del.quantity cm3/: 117.0...119.0 1000 s: (114.0...122.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.50

rpm : 1190...1200 Speed

LOW IDLE

Speed rpm : 275 Rack travel in mm : 5.50...5.70

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

Note remarks

Test sheet : DAF 11,7 n Edition : 03.05.91 Replaces : 19.3.91

Test oil : ISO-4113

Combination no. : 0 402 646 936

Injection pump

Pump designation : PE6P120A320RS7230

EF type number : 0 412 626 843

Governor

Governor design. : RQV250...1000PA990K

Governer no. : 0 421 815 274

Customer—spec. information Customer : DAF

: WS 315 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 105

**Opening** 

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter

x Wall thickness

x Length mm : 8,00x2,50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm

: (4.95...5.15)

Rack travel in mm : 13.80...14.80

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 980

Rack travel in mm : 14.20...14.30

Del.quantity cm3/: 26.4...26.6

100 s: (26.1...26.9)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 250.0 2nd speed Rack travel in mm: 5.8...6.0 Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.3)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed : 1.30...1.70 travel mm

2nd speed rpm : 285

: 2.10...2.50 travel mm

rpm : 1030 3rd speed

: 9.60...10.00 travel mm

4th speed : 1145 rpm

travel mm : 11.20...11.40

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1070 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 980 Aneroid pressure h: 1500

Del.quantity : 204.0...269.0)

: 5.00 Spread cm3 1000 : (9.00)

RATED SPEED

1st version Control lever position degrees: 115...123 Testing: 1st rack travel in: 13.20 rpm : 1030...1040 Speed 2nd rack travel in: 4.00 rpm : 1130...1160 Speed 4th rack travel in: 1275 rpm : 0.00...1.40Speed LOW IDLE 1 Control lever position degrees: ? Testina: Speed rpm : 100 Minimum rack trave: 6.60 : 250 Speed rpm Rack travel in mm : 5.10...5.30 Rack travel in mm : 2.00 : 310...350 Speed rom TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version rpm : 500 1st speed Rack travel in m: 13.00...13.10 2nd speed rpm : 750 Rack travel in m: 13.30...13.50 3rd speed rpm : 825 Rack travel in m: 13.80...14.00 4th speed rpm : 980 Rack travel in m: 14.70...14.90 Aneroid/Altitude Compensator Test 1st version Setting Speed : 980 rpm Pressure hPa : 1500 Rack travel mm : 14.20...14.30 Measurement 1/min: 980 Speed 1st pressure hPa : -Rack travel in m: 8.80...9.00 2nd pressure hPa : 600 Rack travel in m: 11.80...11.90 3rd pressure hPa : 330 Rack travel in m: 10.00...10.20 FUEL DELIVERY CHARACTERISTICS

1st version

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## **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 13.20 Speed rpm : 1030...1040

LOW IDLE

Speed rpm : 250 Rack travel in mm : 5.10...5.30

Remarks:

:

Note remarks

Test sheet : MB 9,6 r 1
Edition : 03.05.91
Replaces : 1.3.91
Test oil : ISO-4113

Combination no. : 0 402 646 939

Injection pump

Pump designation : PE6P12OA32OLS7836 EP type number : 0 412 626 840

Governor

Governor design. : RQV300...950PA797-31

Governer no. : 0 421 813 922

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M401 LA

1st version kW : 200.0 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 105

Opening.

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00X2.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60 : (5.45...5.65) Rack travel in mm : 20.00...21.00

Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 12.40...12.60

Del.quantity cm3/: 18.2...18.4

100 s: (17.9...18.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 5.2...5.8 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6 100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.00...1.50

2nd speed rpm : 617 travel mm : 5.00..

travel mm : 5.00...5.50 3rd speed rpm : 780

travel mm : 6.10...6.60 th speed rpm : 1009

4th speed rpm : 1009 travel mm : 8.30...8.80

travet mm : 8.30...8.80 5th speed rpm : 1092

travel mm : 9.80...10.30

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 1020

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

Rack travel in m: 12.60...12.80 4th pressure hPa : 1150 Speed rpm : 600 Rack travel in m: 12.90...13.10 Aneroid pressure h: 850 Del.quantity : 182.0...184.0 5th pressure hPa : -Rack travel in m: 10.00...10.30 1000 : (179.0...187.0) cm3 : 5.00 Spread 1000 : (9.00) START CUT-OUT RATED SPEED Speed 1/min : 240 (260) 1st version FUEL DELIVERY CHARACTERISTICS Control lever position degrees: 118...126 1st version Aneroid pressure h: 1400 Testing: 1st rack travel in: 12.10 Speed rpm: 990...1000 : 950 Speed rpm Del.quantity cm3/: 203.0...206.0 1000 s: (200.0...209.0) 2nd rack travel in: 4.00 rpm : 1075...1105 Speed cm3 : 8.00Spread 4th rack travel in: 1200 1000 s: (12.0) rpm : 0.00...1.00Speed Aneroid pressure h: 1400 Speed : 800 rpm LOW IDLE 1 Del.quantity cm3/: 202.0...206.0 Control lever 1000 s: (199.0...209.0) position degrees: 82...90 cm3 : 8.00Spread 1000 s: (12.0) Testing: Aneroid pressure h: -Speed rpm : 200 Minimum rack trave: 7.30 : 500 Speed rpm Del.quantity cm3/: 122.0...124.0 1000 s: (119.0...127.0) Speed : 300 rom Rack travel in mm : 5.20...5.80 Spread cm3 : 8.001000 s: (12.0) CONSTANT REGULATION rpm : 300...450 Speed BREAKAWAY TORQUE CONTROL Dimension a mm 1st version : 950 2nd speed rpm 1mm rack travel less than Rack travel in m: 13.10...13.30 3rd speed rpm : 800 full load rack tr: 12.10 Rack travel in m: 13.10...13.30 rpm : 990...1000 Speed Aneroid/Altitude STARTING FUEL DELIVERY Compensator Test Speed rpm : 100 Del.quantity cm3/ : 200.0...220.0 1000 s: (196.0...224.0) 1st version Setting : 600 Speed rpm hPa : 800 Pressure Remarks: : 12.40...12.50 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : 250 Rack travel in m: 10.20...10.40 2nd pressure hPa : 500 Rack travel in m: 11.60...11.80 3rd pressure hPa : 1000

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1st version

Note remarks

: MB 9,6 q 1 : 03.05.91 Test sheet Edition : 18.2.91 Replaces Test oil : ISO-4113

Combination no. : 0 402 646 940

Injection pump

Pump designation : PE6P12OA32OLS7836 EP type number : 0 412 626 840

Governor

Governor design. : RQ300/950PA971-7 Governer no. : 0 421 801 580

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M401 LA

: 200.0 1st version kW Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

**Opening** 

pressure, bar : 207...210

Orifice plate

diameter mm : 0.8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.50...5.60 Prestroke mm

: (5.45...5.65) Rack travel in mm : 20.00...21.00

Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 12.40...12.60

Del.quantity cm3/: 18.2...18.4

100 s: (17.9...18.7)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 5.3...5.9 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6Spread

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 600 Speed Aneroid pressure h: 800

Del.quantity : 182.0...184.0 1000 : (179.0...187.0)

cm3 : 5.00 Spread

1000 : (9.00)

RATED SPEED

1st version

Setting point:

rpm Speed : 600 Rack travel in mm : 20.0

Testing: 1st rack travel in: 12.10 Speed rpm : 990...1005 2nd rack travel in: 4.00 Speed rpm : 1065...1095 4th rack travel in: 1200 Speed rom : 0.00...1.50LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 5.6 : 300 Testing: Speed rpm Minimum rack trave: 7.40 Speed rpm : 300
Rack travel in mm : 5.30...5.90
Rack travel in mm : 2.00
Speed rpm : 370...410 Aneroid/Altitude Compensator Test 1st version Settina : 600 Speed rom hPa : 800 Pressure Rack travel mm : 12.40...12.60 Measurement 1/min: 600 Speed 1st pressure hPa : 250
Rack travel in m: 10.20...10.40
2nd pressure hPa : 500
Rack travel in m: 11.60...11.80 3rd pressure hPa : 1000 Rack travel in m: 12.60...12.80 4th pressure hPa : 1150 Rack travel in m: 12.90...13.10 5th pressure hPa : -Rack travel in m: 10.00...10.30 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1400 Speed rpm : 950 Del.quantity cm3/ : 203.0...206.0 1000 s: (200.0...209.0)

cm3 : 8.00 1000 s: (12.0)

: 800

1000 s: (199.0...209.0)

Aneroid pressure h: 1400

rpm Del.quantity cm3/: 202.0...206.0

cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 122.0...124.0 1000 s: (119.0...127.0) cm3 : 8.00Spread 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.10 rpm : 990...1005 Speed Remarks: •

Spread

Speed

Note remarks

Test sheet : MB 11,1 d Edition : 26.04.91 Replaces : 19.3.91 : ISO-4113 Test oil

Combination no. : 0 402 646 942

Injection pump

Pump designation : PE6P120A320LS7837 EP type number : 0 412 626 842

Governor

Governor design. : RQ300/1050PA993 : 0 421 801 581 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M441 LA

: 250.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 019

**Opening** 

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35)

Firing order

Rack travel in mm : 20.00...21.00 Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.70...14.90

Del.quantity cm3/: 23.4...23.6

100 s: (23.1...23.9)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300.02nd speed Rack travel in mm: 5.6...6.2

Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5) cm3 : 0.6 Spread

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position Degree: -2

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1000 : 234.0...236.0 Del.quantity

1000 : (231.0...239.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm Rack travel in mm: 20.0

1st rack travel in: 13.90 rpm : 1090...1105 Speed 2nd rack travel in: 4.00 Speed rpm : 1145...1175 4th rack travel in: 1200 Speed rpm : 0.00...1.50LOW IDLE 1 Setting point w/out bumper spring Speed Rack travel in mm: 5.9 Testing: speed rpm : 200 Minimum rack trave: 7.70 Speed rpm : 300
Rack travel in mm : 5.60...6.20
Rack travel in mm : 2.00
Speed rpm : 380...420 TORQUE CONTROL Dimension a mm 2nd speed rpm : 1050 Rack travel in m: 14.90...15.10 3rd speed rpm : 800 Rack travel in m: 15.50...15.70 Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 rpm hPa : 1000 Pressure Rack travel mm : 14.70...14.90 Measurement 1/min: 600 Speed 1st pressure hPa : 200 Rack travel in m: 10.00...10.20 2nd pressure hPa : 600 Rack travel in m: 13.50...13.70 3rd pressure hPa : 1250 Rack travel in m: 14.80...15.00 \* 4th pressure hPa : 1400 Rack travel in m: 15.30...15.50 5th pressure hPa : Rack travel in m: 9.30...9.50 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS

Testing:

1st version Aneroid pressure h: 1800 Speed : 1050 rpm Del.quantity cm3/: 235.0...238.0 1000 s: (232.0...241.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: 1800 Speed rpm : 800 Del.quantity cm3/ : 248.0...252.0 1000 s: (245.0...255.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: Speed rpm : 500 Del.quantity cm3/: 135.0...137.0 1000 s: (132.0...140.0) Spread cm3 : 8.001000 s: (12.0)

#### BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.90 Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 220.0...240.0 1000 s: (216.0...244.0)

Remarks:

#### Note remarks

Test sheet : DAF 11,7 nî Edition : 03.05.91

Replaces

Test oil : ISO-4113

: 0 402 646 949 Combination no.

Injection pump

Pump designation : PE6P120A320RS7230Z

EP type number : 0 412 626 848

Governor

Governor design. : RQV250...1000PA990K

Governer no. : 0 421 815 274

Customer-spec. information Customer : DAF

: WS 295 G Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter nm : 0,8

Test lines : 1 680 750 089

Outside diameter x Wall thickness

x Length mm : 8.00X2.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm : (4.95...5.15)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasina : 0-60-120-180-240-300

: 0.50 (0.75) Tolerance + - \*

BASIC SETTING

1st speed rom: 980

Rack travel in mm : 13.70...13.80

Del.quantity cm3/ : 25.4...25.6

100 s: (25.1...25.9)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 250.0 Rack travel in mm : 5.8...6.0 Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

cm3 : 0.8 Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed

: 1.30...1.70 travel mm : 285 2nd speed L DW

: 2.10...2.50 travel mm : 1030 3rd speed rpm

: 9.60...10.00 travel mm

: 1145 4th speed rpm : 11.20...11.40 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1070 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 980 Aneroid pressure h: 1500

254.0...256.0 1000 : (251.0...259.0) Del.quantity

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version Control lever position degrees: 115...123 Testing: 1st rack travel in: 12.70 rpm : 1030...1040 Speed 2nd rack travel in: 4.00 Speed rpm : 1130...1160 4th rack travel in: 1275 rpm : 0.00...1.40 Speed LOW IDLE 1 Control lever position degrees: ? Testing: Speed : 100 rom: Minimum rack trave: 6.60 rpm : 250 Speed Rack travel in mm: 5.10...5.30 Rack travel in mm: 2.00 Speed rpm: 310...350 TORQUE CONTROL Dimension a mm : ? Torque control curve - 1st version st speed rpm : 500 Rack travel in m: 12.10...12.20 1st speed rpm : 675 2nd speed Rack travel in m: 12.60...12.70 3rd speed rpm : 800 Rack travel in m: 13.20...13.40 4th speed rpm : 980 Rack travel in m: 14.10...14.30 Aneroid/Altitude Compensator Test 1st version Setting Speed : 980 rom . Pressure hPa : 1500 Rack travel mm : 13.70...13.80 Measurement 1/min: 980 Speed 1st pressure hPa : -Rack travel in m: 8.20...8.40 2nd pressure hPa : 530 Rack travel in m: 10.80...10.90 3rd pressure hPa : 290 Rack travel in m: 9.10...9.30 FUEL DELIVERY CHARACTERISTICS

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.70 Speed rpm : 1030...1040

LOW IDLE

Speed rpm : 250

Rack travel in mm : 5.10...5.30

Remarks:

:

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1st version

Note remarks

: MB 9,6 s : 03.05.91 Test sheet Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 646 950

Injection pump

Pump designation : PE6P120A320LS7837

EP type number : 0 412 626 842

Governor

Governor design. : RQ300/950PA993-2 : 0 421 801 590 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: 04401 LA Engine

1st version kW : 250.0 : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35) Rack travel in mm : 20.00...21.00

Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.70...14.90

Del.quantity cm3/: 23.3...23.5

100 s: (23.0...23.8)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300.0 2nd speed Rack travel in mm : 5.6...6.2 Del.quantity cm3/ : 1.6...2.2

Spread

100 s: (1.3...2.5) cm3 : 0.6 100 s: (1.0)

GUIDE SLEEVE POSITION Control-Lever position

Degree: -2 rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Speed rpm : 600Aneroid pressure h: 1000

: 233.0...235.0 : (230.0...238.0) Del.quantity 1000

: 5.00 cm3

1000 : (9.00)

RATED SPEED

Spread

1st version

Setting point: Speed : 600 rom Rack travel in mm : 20.0

Testing: 1st rack travel in: 14.50 Speed rpm : 990...1005 2nd rack travel in: 4.00 Speed rpm : 1065...1095 4th rack travel in: 1200 Speed rpm : 0.00...1.50Speed LOW IDLE 1 Setting point w/out bumper spring : 300 rpm Rack travel in mm : 5.9 Testing: Speed rpm Minimum rack trave: 7.90 Speed rpm : 300
Rack travel in mm : 5.60...6.20
Rack travel in mm : 2.00 : 380...420 Speed rom TORQUE CONTROL Dimension a mm : 0.40 2nd speed rpm : 950 Rack travel in m: 15.50...15.70 3rd speed rpm : 800 Rack travel in m: 15.60...15.80 Aneroid/Altitude Compensator Test 1st version Setting Speed rom : 600 hPa : 1000 Pressure : 14.70...14.90 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : 200 Rack travel in m: 10.00...10.20 2nd pressure hPa : 600 Rack travel in m: 13.50...13.70 3rd pressure hPa : 1250 Rack travel in m: 14.80...15.00 \* 4th pressure hPa : 1450 Rack travel in m: 15.40...15.60 5th pressure hPa Rack travel in m: 9.30...9.50 FUEL DELIVERY CHARACTERISTICS 1st version

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 14.50 Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 240.0...260.0 1000 s: (236.0...264.0)

Remarks:

Speed

Aneroid pressure h: 1800

rpm : 950

Note remarks

Test sheet : MB 14,7 i 1 : 26.04.91 Edition : 1.7.88 Replaces Test oil : ISO-4113

Combination no. : 0 402 648 846

Injection pump

Pump designation : PE8P120A320LS7815 EP type number : 0 412 628 827

Governor

Governor design. : RQV350...1050PA870-3

: 0 421 813 700 Governer no.

Customer-spec. information

Customer : DAIMLER-BENZ

Engine : 0M442LA

: 368.0 : 2100 1st version kW Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening.

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35) Rack travel in mm : 20.00...21.00

Firing order : 8- 7- 2- 6- 3- 5-

: 0-45-90-135-180-225-Phasing

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. :8

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 15.10...15.20

Del.quantity cm3/: 25.8...26.0

100 s: (25.5...26.3)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 350.02nd speed Rack travel in mm : 5.2...5.7 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6 Spread 100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 350 1st speed

: 1.90...2.10 travel mm

2nd speed rpm : 700

: 4.10...4.50 travel mm

3rd speed : 1100 rpm

travel mm : 7.60...8.00

: 1200 4th speed L DW

travel mm : 9.50...9.90

GUIDE SLEEVE POSITION Control-Lever position

Degree: -1

rpm : 1150 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050 Aneroid pressure h: 1500 258.0...260.0 1000 : (255.0...263.0) Del.quantity : 5.00 cm3 Spread 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 114...122 Testina: 1st rack travel in: 14.10 Speed rpm : 1090...1100 2nd rack travel in: 4.00 Speed rpm : 1190...1220 4th rack travel in: 1300 Speed rom. : 0.00...1.00 LOW IDLE 1 Control Lever position degrees: 64...72 Testing: Speed Speed rpm : 200 Minimum rack trave: 7.70 rpm Rack travel in mm : 5.20...5.40 CONSTANT REGULATION rpm : 350...600 Speed TORQUE CONTROL Dimension a mm Torque control curve - 1st version st speed rpm : 1050
Rack travel in m: 15.10...15.20 1st speed : 1000 rpm 2nd speed Rack travel in m: 15.30...15.50 3rd speed rpm : 930 Rack travel in m: 15.50...15.70 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rom hPa : 1000 Pressure Rack travel mm : 14.50...14.70 Measurement 1/min: 600 Speed 1st pressure hPa : 330 Rack travel in m: 10.20...10.40 2nd pressure hPa : 600

Rack travel in m: 13.10...13.30 3rd pressure hPa : 1260
Rack travel in m: 14.70...14.90
4th pressure hPa : 1400
Rack travel in m: 15.10...15.30 5th pressure hPa : -Rack travel in m: 8.80...9.10 START CUT-OUT 1/min: 270 (290) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 Speed : 600 rpm Del.quantity cm3/: 239.0...241.0 1000 s: (236.0...244.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: 1500 Speed rpm : 800 Del.quantity cm3/: 266.0...269.0 1000 s: (263.0...272.0) Spread : 8.00 1000 s: (12.0) Aneroid pressure h: 1500 rpm : 1050 Speed Del.quantity cm3/: 194.0...196.0 1000 s: (191.0...199.0) cm3 : 8.00Spread 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 14.10 Speed rpm : 1090...1100 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 260.0...280.0 1000 s: (256.0...284.0) Remarks:

Note remarks

Test sheet : MB 14,7 k 1 Edition : 24.04.91 : 23.11.90 Replaces : ISO-4113 Test oil

Combination no. : 0 402 648 881

Injection pump

Pump designation : PE8P120A320LS7816 EP type number : 0 412 628 829

Governor

Governor design. : RQV300...950PA797-13

: 0 421 813 841 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M442 LA Engine

1st version kW : 353.0 : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening 1

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 20.00...21.00

Firing order : 8-7-2-6-3-5-

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.60...14.80

Del.quantity cm3/: 25.4...25.6

100 s: (25.1...25.9)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm: 5.9...6.5 Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5) Spread cm3 : 0.6

100 s: (1.0)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

1.10...1.40 travel mm

rpm : 700 2nd speed

: 5.50...6.00 rpm : 1100 travel mm

3rd speed

travel mm : 8.30...8.80

4th speed rpm : 1090

: 9.70...10.20 travel mm

rpm : 1190 5th speed

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1000 Speed

Rack travel in mm : 16.20...18.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version rpm : 600 Speed Aneroid pressure h: 1000 Del.quantity : 254.0...259.0) cm3 : 6.00 Spread 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 120...128 Testing: 1st rack travel in: 14.20 Speed rpm : 990...1000 2nd rack travel in: 4.00 Speed rpm : 1080...1110 4th rack travel in: 1150 Speed rpm : 0.00...1.00 LOW IDLE 1 Control lever position degrees: 82...90 Testing: Speed rom Minimum rack trave: 7.80 Speed : 300 rom Rack travel in mm : 5.90...6.50 CONSTANT REGULATION rpm : 300...500 Speed TORQUE CONTROL Dimension a mm : 0.30 2nd speed rpm : 950 Rack travel in m: 15.20...15.40 3rd speed rpm : 800 Rack travel in m: 15.50...15.70 Aneroid/Altitude Compensator Test 1st version Setting rpm Speed : 600 Pressure hPa : 1000 Rack travel mm : 14.60...14.80 Measurement 1/min: 600 Speed 1st pressure hPa : 350 Rack travel in m: 12.00...12.20 2nd pressure hPa : 700 Rack travel in m: 13.80...14.00

3rd pressure hPa : 1200 Rack travel in m: 14.80...15.00 4th pressure hPa : 1500 Rack travel in m: 15.50...15.70 5th pressure hPa : -Rack travel in m: 10.20...10.50 START CUT-OUT 1/min : 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1600 Speed rpm : 950 Del.quantity cm3/ : 270.0...273.0 1000 s: (267.0...276.0) cm3 : 8.00Oread 1000 s: (12.0) Aneroid pressure h: 1600 Speed rpm : 800 Del.quantity cm3/ : 270.0...274.0 1000 s: (267.0...277.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: -Speed : 500 rpm Del.quantity cm3/: 145.0...147.0 1000 s: (142.0...150.0) cm3 : 8.00Spread 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 14.20 rpm : 990...1000 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 240.0...260.0 1000 s: (236.0...264.0) Remarks:

Note remarks

: MB 14,7 a22 Test sheet : 24.04.91 Edition : 12.4.90 Replaces : ISO-4113 Test oil

Combination no. : 0 402 648 890

Injection pump

Pump designation : PE8P120A320LS7801 EP type number : 0 412 628 806

Governor

Governor design. : RQ300/950PA932-4 : 0 421 801 533 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

Engine : 0M442 A

: 269.0 1st version kW Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening 1

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35) Rack travel in mm : 20.00...21.00 8-7-2-6-3- 5firing order

: 0-45-90-135-180-225-Phasing

270-315

Tolerance + - \* : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

rpm: 500 1st speed

Rack travel in mm: 14.00...14.20

Del.quantity cm3/: 20.1...20.3

100 s: (19.8...20.6)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.02nd speed

Rack travel in mm: 6.0...6.4 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5) cm3 : 0.6Spread

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 500

Aneroid pressure h: 800 Del.quantity

: 201.0...203.0 1000 : (198.0...206.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

: 600 Speed rpm

Rack travel in mm: 20.0 Testing: 1st rack travel in: 11.90 rpm : 990...1000 Speed 2nd rack travel in: 4.00 rpm : 1060...1090 Speed 4th rack travel in: 1200 rpm : 0.00...1.50Speed LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 6.2 Testina: Speed : 200 rpm Minimum rack trave: 8.00 : 300 Speed rpm Rack travel in mm : 6.00...6.40 Rack travel in mm : 2.00 : 380...420 Speed rom TORQUE CONTROL Dimension a mm : 0.75 : 950 2nd speed rpm Rack travel in m: 12.90...13.10 3rd speed rpm : 800 Rack travel in m: 14.20...14.40 Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 mom hPa : 800 Pressure : 14.00...14.20 Rack travel mm Measurement  $1/\min: 600$ Speed 1st pressure hPa : 350 Rack travel in m: 11.80...12.00 2nd pressure hPa : 500 Rack travel in m: 13.30...13.60 3rd pressure hPa : 950 Rack travel in m: 14.10...14.20 \* 4th pressure hPa : -Rack travel in m: 10.60...11.00 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1150 Speed rpm : 950 Del.quantity cm3/: 190.0...193.0

1000 s: (187.0...196.0)

Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: 1150 Speed : 750 rpm Del.quantity cm3/: 216.0...219.0 1000 s: (213.0...222.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: -Speed : 500 rpm Del.quantity cm3/: 138.0...140.0 1000 s: (135.0...143.0) Spread cm3 : 8.001000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.90 Speed rpm : 990...1000

Remarks:

F04

Note remarks

Test sheet : MB 12,8 o
Edition : 26.04.91
Replaces : 15.11.90
Test oil : ISO-4113

Combination no. : 0 402 648 893

Injection pump

Pump designation : PE8P120A320LS7835 EP type number : 0 412 628 847

Governor

Governor design. : RQ300/950PA971-2

Governer no. : 0 421 801 548

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M402 A

1st version kW : 280.0 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 105

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60 : (5.45...5.65)

Rack travel in mm : 20.00...21.00

Firing order : 8-7-2-6-3-5-

4-1

Phasing : 0-45-90-135-180-225-270-315

Tolerance  $+ - \circ : 0.50 (0.75)$ 

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.20...14.40

Del.quantity cm3/: 22.5...22.7

100 s: (22.2...23.0)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.2...6.8 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6 100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

Speed rpm : 600 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 1000

Del.quantity : 225.0...227.0

1000 : (222.0...230.0)

Spread cm3 : 6.00 1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm: 20.0 Testina: 1st rack travel in: 12.70 rpm : 990...1005 Speed 2nd rack travel in: 4.00 rpm : 1070...1100 Speed 4th rack travel in: 1150 rpm : 0.00...1.50Speed LOW IDLE 1 Setting point w/out bumper spring : 300 Speed rpm Rack travel in mm: 6.5 Testing: Speed rpm : 200 Minimum rack trave: 7.80 : 300 **Lbu** Speed Rack travel in mm : 6.20...6.80 Rack travel in mm: 2.00 : 380...420 Speed **LDW** TORQUE CONTROL Dimension a mm : 0.50 : 950 2nd speed rpm Rack travel in m: 13.70...13.90 : 800 3rd speed rpm Rack travel in m: 14.60...14.80 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed mqn: hPa : 1000 Pressure Rack travel mm : 14,20...14.40 Measurement 1/min: 600 Speed 1st pressure hPa : 250 Rack travel in m: 9.40...9.60 2nd pressure hPa : 650 Rack travel in m: 13.00...13.20 3rd pressure hPa : 1200 Rack travel in m: 14.30...14.50 \* 4th pressure hPa : -Rack travel in m: 8.60...8.90 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1500 Speed nom : 950 Del.quantity cm3/: 216.0...219.0 1000 s: (213.0...222.0)

cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: 1500 : 800 Speed rpm Del.quantity cm3/: 234.0...238.0 1000 s: (231.0...241.0) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 122.0...124.0 1000 s: (119.0...127.0) : 8.00 Spread cm3 1000 s: (12.0)

## **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 12.70 Speed rpm : 990...1005

Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

F06

Note remarks

: MB 12,8 o 1 : 26.04.91 : 23.11.90 Test sheet Edition Replaces Test oil : ISO-4113

: 0 402 648 894 Combination no.

Injection pump

Pump designation : PE8P120A320LS7835 EP type number : 0 412 628 847

Governor

Governor design. : RQV300...950PA797-18

Governer no. : 0 421 813 886

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M402 A

1st version kW : 280.0 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening 1 continue 1

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.50...5.60 Prestroke mm

: (5.45...5.65)

Rack travel in mm : 20.00...21.00 Firing order : 8-7-2-6-3- 5-

: 0-45-90-135-180-225-Phasing

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

rpm: 600 1st speed

Rack travel in mm : 14.20...14.40

Del.quantity cm3/: 22.5...22.7

100 s: (22.2...23.0)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 6.2...6.8 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5) cm3 : 0.6Spread

100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 1.00...1.50 travel mm : 567 2nd speed rpm

: 4.40...4.90 travel mm

3rd speed : 780 rpm

6.10...6.60 travel mm

4th speed 1009 rpm

travel mm : 8.30...8.80

5th speed : 1092 rpm

: 9.80...10.30 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Speed rpm : 600 Aneroid pressure h: 1000 Del.quantity : 225.0...227.0 1000 : (222.0...230.0) Spread cm3 : 6.00 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 122...130 Testing: 1st rack travel in: 12.70 rpm : 990...1000 Speed 2nd rack travel in: 4.00 rpm : 1070...1100 Speed 4th rack travel in: 1250 Speed rpm : 0.00...1.50 LOW IDLE 1 Control lever position degrees: 80...88 Testing: Speed rpm : 200 Minimum rack trave: 8.00 Speed rpm : 300 Rack travel in mm : 6.20...6.80 CONSTANT REGULATION rpm : 250...360 Speed TORQUE CONTROL Dimension a mm : 0.50 2nd speed rpm : 950 Rack travel in m: 13.70...13.90 : 800 3rd speed rpm Rack travel in m: 14.60...14.80 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rpm hPa : 1000 Pressure Rack travel mm : 14.20...14.40 Measurement Speed 1/min: 600 1st pressure hPa : 250 Rack travel in m: 9.40...9.60 2nd pressure hPa : 650

Rack travel in m: 13.00...13.20

3rd pressure hPa : 1200 Rack travel in m: 14.30...14.50 \* 4th pressure hPa : -Rack travel in m: 8.60...8.90 START CUT-OUT 1/min : 240 (260) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1500 rpm Del.quantity cm3/: 216.0...219.0 1000 s: (213.0...222.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: 1500 Speed rom Del.quantity cm3/: 234.0...238.0 1000 s: (231.0...241.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 122.0...124.0 1000 s: (119.0...127.0) cm3 : 8.00 1000 s: (12.0) Spread **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.70 rpm : 990...1000 Speed STARTING FUEL DELIVERY rpm : 100 Del.quantity cm3/: 210.0...230.0 1000 s: (206.0...234.0) Remarks: \* Increase in control-rod travel with respect to setting at least 0.1 mm

# Note remarks

: MB 12,8 o 2 Test sheet Edition : 26.04.91 : 27.2.91 Replaces Test oil : ISO-4113

Combination no. : 0 402 648 895

Injection pump

Pump designation : PE8P120A320LS7835 EP type number : 0 412 628 847

Governor

Governor design. : RQ300/1050PA972-1

Governer no.

: 0 421 801 545

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M402 A Engine

1st version kW : 280.0 : 2100 Rated speed

## TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 105

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

: 1 680 750 075 Test lines

Outside diameter x Wall thickness

: 8.00X2.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60 : (5.45...5.65)

Rack travel in mm : 20.00...21.00 Firing order : 8-7-2-6-3-5-

: 0-45-90-135-180-225-270-315 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

# BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.80...15.00

Del.quantity cm3/: 22.5...22.7

100 s: (22.2...23.0)

Spread cm3 : 0.6

100 s: (0.9)

rpm : 300.02nd speed

Rack travel in mm : 6.2...6.8

Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 1000

Del.quantity : 225.0...227.0 1000 : (222.0...230.0) Spread cm3 : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

: 600 Speed rpm

Rack travel in mm: 20.0 Testina: 1st rack travel in: 13.30 Speed rpm : 1090...1105 2nd rack travel in: 4.00 : 1170...1200 Speed rpm 4th rack travel in: 1350 Speed rom : 0.00...1.50LOW IDLE 1 Setting point w/out bumper spring rpm : 300° Rack travel in mm: 6.5 Testing: Speed rpm : 200 Minimum rack trave: 7.80 Speed rpm : 300 Rack travel in mm : 6.20...6.80 Rack travel in mm : 2.00 Speed rom : 380...420 TORQUE CONTROL : 0.50 Dimension a mm 2nd speed rpm : 950 Rack travel in m: 14.30...14.50 3rd speed rpm : 800 Rack travel in m: 15.20...15.40 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rpm hPa : 1000 Pressure Rack travel mm : 14.80...15.00 Measurement 1/min: 600 Speed 1st pressure hPa : 250 Rack travel in m: 10.00...10.20 2nd pressure hPa : 650 Rack travel in m: 13.60...13.80

3rd pressure hPa : 1200

Rack travel in m: 14.90...15.00 \* 4th pressure hPa : Rack travel in m: 9.00...9.30 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1500

rpm : 1050

Del.quantity cm3/: 214.0...217.0 1000 s: (211.0...220.0) Spread cm3: 8.00
1000 s: (12.0)
Aneroid pressure h: 1500
Speed rpm: 800
Del.quantity cm3/: 232.0...236.0
1000 s: (229.0...239.0)
Spread cm3: 8.00
1000 s: (12.0)
Aneroid pressure h: Speed rpm: 500
Del.quantity cm3/: 122.0...124.0
1000 s: (119.0...127.0)
Spread cm3: 8.00

1000 s: (12.0)

### **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 13.30 Speed rpm : 1090...1105

Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

Speed

Note remarks

: MB 14,7 v 2 Test sheet : 26.04.91 : 27.2.91 Edition Replaces : ISO-4113 Test oil

Combination no. : 0 402 648 899

Injection pump

Pump designation : PE8P12OA32OLS7839 EP type number : 0 412 628 849

Governor

Governor design. : RQ300/950PA971-5 Governer no. : 0 421 801 559

Customer-spec. information

: MERCEDES-BENZ Customer

: 0M442 LA Engine

: 370.0 1st version kW : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 : (4.95...5.15) Prestroke mm

Rack travel in mm : 20.00...21.00

: 8-7-2-6-3-5-4-1 Firing order

Phasing : 0-45-90-135-180-225-

270-315

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.10...14.30

Del.quantity cm3/: 25.2...25.4

100 s: (24.9...25.7)

cm3 : 0.6 Spread

100 s: (0.9)

rpm : 300.02nd speed

Rack travel in mm : 5.2...5.8 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6Spread 100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2 rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 1050

: 252.0...254.0 Del.quantity

1000 : (249.0...257.0)

Spread cm3 : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

: 600 Speed rom

Rack travel in mm: 20.0 Testina: 1st rack travel in: 14.70 rpm : 990...1005 Speed 2nd rack travel in: 4.00 : 1075...1105 Speed rpm 4th rack travel in: 1150 rpm : 0.00...1.50Speed LOW IDLE 1 Setting point w/out bumper spring Speed COM Rack travel in mm: 5.5 Testing: : 200 Speed rpm Minimum rack trave: 6.80 : 300 rpm Speed Rack travel in mm : 5.20...5.80 Rack travel in mm: 2.00 Speed man : 370...410 TORQUE CONTROL Dimension a mm : 950 2nd speed rom Rack travel in m: 15.70...15.90 : 800 3rd speed rpm Rack travel in m: 16.00...16.20 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rom hPa : 1050 Pressure Rack travel mm : 14.10...14.30 Measurement 1/min: 600 Speed 1st pressure hPa : 290 Rack travel in m: 8.70...8.90 2nd pressure hPa : 780 Rack travel in m: 13.20...13.40 3rd pressure hPa : 1200 Rack travel in m: 14.30...14.50 4th pressure hPa : 1380 Rack travel in m: 15.10...15.30 5th pressure hPa : -Rack travel in m: 8.40...8.70 FUEL DELIVERY CHARACTERISTICS 1st version

Del.quantity cm3/: 290.0...293.0 1000 s: (287.0...296.0) Spread : 8.00 cm3 1000 s: (12.0) Aneroid pressure h: 1800 : 800 Speed rpm Del.quantity cm3/: 295.0...299.0 1000 s: (292.0...302.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 139.0...141.0 1000 s: (136.0...144.0) Spread cm3 : 8.001000 s: (12.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 14.70 Speed rpm : 990,..1005

Remarks:

:

Speed

Ameroid pressure h: 1800

rom

: 950

Note remarks

: MB 14,7 u : 03.05.91 Test sheet Edition : 7.1.91 Replaces Test oil : ISO-4113

Combination no. : 0 402 648 900

Injection pump

Pump designation : PE8P120A320LS7840 EP type number : 0 412 628 850

Governor

Governor design. : RQ300/1050PA972-4

Governer no. : 0 421 801 560

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M442 A Engine

: 250.0 1st version kW Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30 : (5.15...5.35) Rack travel in mm : 20.00...21.00

: 8-7-2-6-3-5-4-1 Firing order

: 0-45-90-135-180-225-270-315 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 13.30...13.50

Del.quantity cm3/: 20.6...20.8

100 s: (20.3...21.1)

cm3 : 0.6Spread

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm: 6.0...6.6

Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6Spread

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2 rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 600 Speed Aneroid pressure h: 900

: 206.0...208.0 Del.quantity

1000 : (203.0...211.0) Spread cm3 : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

F13

Rack travel in mm: 20.0 Testing: 1st rack travel in: 11.90 rpm : 1090...1105 Speed 2nd rack travel in: 4.00 rpm : 1160...1190 Speed 4th rack travel in: 1250 rpm : 0.00...1.50Speed LOW IDLE 1 Setting point w/out bumper spring rpm Rack travel in mm: 6.5 Testing: Speed man Minimum rack trave: 7.90 : 300 rpm Rack travel in mm : 6.20...6.80 Rack travel in mm: 2.00 : 380...420 Speed rpm TORQUE CONTROL : 0.65 Dimension a mm 2nd speed rpm : 1050 Rack travel in m: 12.90...13.10 3rd speed rpm : 800 Rack travel in m: 14.20...14.40 Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 rpm Pressure hPa : 900 Rack travel mm : 13.30...13.50 Measurement 1/min: 600 Speed 1st pressure hPa : 300 Rack travel in m: 11.10...11.30 2nd pressure hPa : 650 Rack travel in m: 12.60...12.80

3rd pressure hPa : 1050
Rack travel in m: 13.40...13.50 \*
4th pressure hPa : 1250 Rack travel in m: 14.00...14.20 5th pressure hPa : -Rack travel in m: 10.60...10.80 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1500

rpm : 1050

Del.quantity cm3/: 194.0...197.0 1000 s: (191.0...200.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: 1500 : 800 Speed rpm Del.quantity cm3/: 220.0...224.0 1000 s: (217.0...227.0) Spread : 8.00 cm3 1000 s: (12.0) Aneroid pressure h: -: 500 Speed rpm Del.quantity cm3/: 123.0...125.0 1000 s: (120.0...128.0) cm3 : 8.00Spread 1000 s: (12.0)

## **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 11.90 Speed rpm : 1090...1105

Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

:

F14

Speed

Note remarks

Test sheet : MB 14.7 u 1 : 03.05.91 Edition Replaces : 25.1.91 Test oil : ISO-4113

Combination no. : 0 402 648 901

Injection pump

Pump designation : PE8P120A320LS7840 EP type number : 0 412 628 850

Governor

Governor design. : RQV300...1050PA797-

Governer no. : 0 421 813 894

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M442 A Engine

: 250.0 1st version kW Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening 1

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35)

Rack travel in mm : 20.00...21.00

: 8- 7- 2- 6- 3- 5-Firing order

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

rpm: 600 1st speed

Rack travel in mm : 13.30...13.50

Del.quantity cm3/: 20.6...20.8

100 s: (20.3...21.1)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.6

Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

(B) Setting of injection pump

with governor

GUIDEASLEEVE TRAVEL

: 300 1st speed rpm

: 1.10...1.60 travel mm : 470

2nd speed rpm : 3.00...3.50 travel mm

3rd speed : 830 rpm

travel mm : 5.90...6.40

: 1110 4th speed rpm

: 8.20...8.70 travel mm

: 1183 5th speed rpm

: 9.80...10.30 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1125 Speed

Rack travel in mm : 15.20...17.80

Rack travel in m: 12.30...12.50 3rd pressure hPa : 1050 Rack travel in m: 13.60...13.70 \*
4th pressure hPa : 1120
Rack travel in m: 14.10...14.30
5th pressure hPa : -1st version Speed rpm : 600 Aneroid pressure h: 900 Del.quantity : 206.0...208.0 1000 : (203.0...211.0) Rack travel in m: 10.40...10.70 Spread cm3 : 6.00 1000 : (9.00) START CUT-OUT RATED SPEED Speed 1/min: 220 (240) 1st version FUEL DELIVERY CHARACTERISTICS Control lever position degrees: 116...124 1st version Testing: Aneroid pressure h: 1500 Speed rpm : 1050 Del.quantity cm3/: 194.0...197.0 1st rack travel in: 11.90 rpm : 1090...1100 Speed 2nd rack travel in: 4.00 1000 s: (191.0...200.0) rpm : 1160...1190 cm3 : 8.00 Speed Spread 4th rack travel in: 1300 1000 s: (12.0) rpm : 0.00...1.00Aneroid pressure h: 1500 Speed : 800 Speed rpm Del.quantity cm3/: 220.0...224.0 LOW IDLE 1 1000 s: (217.0...227.0) Control lever position degrees: 84...92 Spread cm3 : 8.00 1000 s: (12.0) Testina: Aneroid pressure h: rpm : 500 Speed : 200 Speed rpm Minimum rack trave: 7.90 Del.quantity cm3/: 123.0...125.0 rpm : 300 1000 s: (120.0...128.0) Rack travel in mm : 6.10...6.70 : 8.00 cm3 Spread 1000 s: (12.0) CONSTANT REGULATION rpm : 300...450 Speed BREAKAWAY TORQUE CONTROL Dimension a mm : 0.20 2nd speed rpm : 1050 Rack travel in m: 12.90...13.10 3rd speed rpm : 800 Rack travel in m: 10.20 1st version 1mm rack travel less than full load rack tr: 11.90 Rack travel in m: 14.20...14.40 rpm : 1090...1100 Speed Aneroid/Altitude STARTING FUEL DELIVERY Compensator Test rpm : 100 Speed Del.quantity cm3/: 180.0...200.0 1st version 1000 s: (176.0...204.0) Setting Speed : 600 rpm Pressure hPa : 800 Remarks: Rack travel mm : 13.50...13.70 Measurement \* Increase in control-rod travel with 1/min: 600 Speed respect to setting at least 0.1 mm 1st pressure hPa : 440 Rack travel in m: 11.30...11.50 2nd pressure hPa : 550

FULL LOAD DELIV. AT FULL LOAD STOP

Note remarks

: MB 14,7 v Test sheet : 24.04.91 Edition : 20.12.90 Replaces Test oil : ISO-4113

: 0 402 648 902 Combination no.

Injection pump

Pump designation : PE8P120A320LS7839 EP type number : 0 412 628 849 Governor

Governor design. : RQ300/1050PA972-5 : 0 421 801 564 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

Engine : 0M442 LA

1st version kW : 370.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10 : (4.95...5.15) Rack travel in mm : 20.00...21.00 Firing order : 8-7-2-6-3-5-

Phasing : 0-45-90-135-180-225-

270-315

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 15.10...15.30

Del.quantity cm3/: 25.2...25.4

100 s: (24.9...25.7)

Spread cm3 : 0.6

100 s: (0.9)

rpm : 300.0 2nd speed

Rack travel in mm: 6.2...6.8

Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

Speed rpm: 600 Rack travel in mm: 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Spread

Speed rpm: 600 Aneroid pressure h: 1050

252.0...254.0 1000 : (249.0...257.0) Del.quantity

cm3 : 6.00 1000 : (9.00) Spread

RATED SPEED

1st version

Setting point:

Speed : 600 rpm

Rack travel in mm : 20.0 Testing: 1st rack travel in: 15.00 Speed rpm : 1090...1105 2nd rack travel in: 4.00 Speed rpm : 1160...1190 4th rack travel in: 1250 Speed rpm : 0.00...1.50LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 6.5 Testing: : 200 Speed rpm Minimum rack trave: 7.80 Speed : 300 rom Rack travel in mm : 6.20...6.80 Rack travel in mm : 2.00 Speed rom : 380...420 TORQUE CONTROL Dimension a mm : 1050 2nd speed rpm Rack travel in m: 16.00...16.20 3rd speed rpm : 800 Rack travel in m: 16.80...17.00 Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 rpm hPa : 1050 Pressure : 15.10...15.30 Rack travel mm Measurement Speed  $1/\min : 600$ 1st pressure hPa : 290 Rack travel in m: 9.70...9.90 2nd pressure hPa : 780 Rack travel in m: 14.20...14.40 3rd pressure hPa : 1200 Rack travel in m: 15.20...15.40 \* 4th pressure hPa : 1380 Rack travel in m: 16.10...16.30 5th pressure hPa : Rack travel in m: 9.30...9.60 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1800

: 1050

rpm

Del.quantity cm3/: 274.0...277.0 1000 s: (271.0...280.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: 1800 Speed rpm : 800 Del.quantity cm3/: 295.0...299.0 1000 s: (292.0...302.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: Speed rpm : 500 Del.quantity cm3/: 139.0...141.0 1000 s: (136.0...144.0) cm3 : 8.00Spread 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 15.00 Speed rpm : 1090...1105

Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

F18

Speed

Note remarks

Test sheet : MB 14,7 W : 26.04.91 Edition : 28.3.91 Replaces Test oil : ISO-4113

: 0 402 648 906 Combination no.

Injection pump

Pump designation : PE8P120A320LS7838 EP type number : 0 412 628 848

Governor

Governor design. : RQ300/1050PA972-6 : 0 421 801 569 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M442 A

1st version kW : 320.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00X2.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35) Rack travel in mm : 20.00...21.00

: 8-7-2-6-3-5-Firing order

: 0-45-90-135-180-225-Phasing

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rom : 600

Rack travel in mm: 14.10...14.30

Del.quantity cm3/: 22.9...23.1

100 s: (22.6...23.4)

cm3 : 0.6Spread

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.2...6.8 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6Spread

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 1020 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 1000

Del.quantity : 229.0...234.0)

: 6.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed : 1020 rpm

Rack travel in mm : 20.0 Speed : 1050 rpm Del.quantity cm3/: 226.0...229.0 1000 s: (223.0...232.0) Testing: 1st rack travel in: 13.50 Spread cm3 : 8.00rpm : 1090...1105 Speed 1000 s: (12.0) 2nd rack travel in: 4.00 Aneroid pressure h: 1600 rpm : 1165...1195 Speed Speed : 800 rpm Del.quantity cm3/: 239.0...243.0 1000 s: (236.0...246.0) 4th rack travel in: 1250 Speed rpm : 0.00...1.50: 8.00 Spread cm3 1000 s: (12.0) LOW IDLE 1 Setting point w/out bumper spring Aneroid pressure h: rpm Speed : 500 rpm Del.quantity cm3/: 138.0...140.0 1000 s: (135.0...143.0) Rack travel in mm: 6.5 Testing: cm3 : 8.00 Spread Speed : 200 1000 s: (12.0) rpm Minimum rack trave: 7.80 : 300 rpm Rack travel in mm : 6.20...6.80 **BREAKAWAY** CONSTANT REGULATION 1st version : 300...500 Speed 1mm rack travel less than rpm TORQUE CONTROL full load rack tr: 13.50 Dimension a mm Speed rpm : 1090...1105 2nd speed rpm : 1050 Rack travel in m: 14.50...14.70 Remarks: 3rd speed rpm : 800 Rack travel in m: 15.00...15.20 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed mqn. Pressure hPa : 1000 : 14.10...14.30 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : 350 Rack travel in m: 10.00...10.20 2nd pressure hPa : 700 Rack travel in m: 13.00...13.20 3rd pressure hPa : 1200 Rack travel in m: 14.30...14.50 4th pressure hPa : 1350 Rack travel in m: 14.70...14.90 5th pressure hPa : Rack travel in m: 9.20...9.40 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1600

F20

Note remarks

: MB 14,7 v 1 : 26.04.91 Test sheet Edition : 16.1.91 Replaces Test oil : ISO-4113

Combination no. : 0 402 648 907

Injection pump

Pump designation : PE8P12OA320LS7839 EP type number : 0 412 628 849

Governor

Governor design. : RQV300...950PA797-22

Governer 12. : 0 421 813 909

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M442 LA

: 370.0 1st version kW Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 019

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm

: (4.95...5.15)

Rack travel in mm : 20.00...21.00 Firing order : 8-7-2-6-3- 5-

: 0-45-90-135-180-225-Phasing

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 15.10...15.30

Del.quantity cm3/: 25.2...25.4

100 s: (24.9...25.7)

cm3 : 0.6Spread

100 s: (0.9)

rpm : 300.02nd speed Rack travel in mm : 6.2...6.8 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6Spread

100 s. (1.0)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL 1st speed

rpm : 300 travel mm : 1.00...1.50

2nd speed : 617 rpm

travel mm : 5.00...5.50

3rd speed : 780 rpm

travel mm : 6.10...6.60

: 1010 4th speed rpm

: 8.30...8.80 travel mm

5th speed man : 1092

: 9.80...10.30 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1020

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version rpm : 600 Speed Aneroid pressure h: 1000 : 252.0...254.0 : (249.0...257.0) Del.quantity 1000 Spread cm3 : 6.00 : (9.00) 1000 RATED SPEED 1st version Control lever position degrees: 118...126 Testing: 1st rack travel in: 15.50 Speed rpm : 990...1000 2nd rack travel in: 4.00 Speed rpm : 1075...1105 4th rack travel in: 1150 Speed rom : 0.00...1.00LOW IDLE 1 Control Lever position degrees: 82...90 Testina: Speed rpm : 200 Minimum rack trave: 7.80 rpm : 300 Speed Rack travel in mm : 6.20...6.80 CONSTANT REGULATION rpm : 300...500 Speed Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 rpm Pressure hPa : 1000 Rack travel mm : 15.10...15.30 Measurement 1/min: 600 Speed 1st pressure hPa : 296 Rack travel in m: 9.70...9.90 2nd pressure hPa : 760 Rack travel in m: 14.30...14.50 3rd pressure hPa : 1200 Rack travel in m: 15.30...15.50

1/min: 240 (260) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1800 Speed rpm : 950 Del.quantity cm3/: 290.0...293.0 1000 s: (287.0...296.0) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: 1800 Speed rpm : 800 Del.quantity cm3/: 295.0...299.0 1000 s: (292.0...302.0) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 139.0...141.0 1000 s: (136.0...144.0) cm3 : 8.00Spread 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 15.50 rpm : 990...1000 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 210.0...230.0 1000 s: (206.0...234.0) Remarks:

START CUT-OUT

4th pressure hPa : 1500

Rack travel in m: 16.10...16.30

Note remarks

Test sheet : MB 14,7 w 1 : 26.04.91 : 28.3.91 Edition Replaces Test oil : ISO-4113

Combination no. : 0 402 648 908

Injection pump

Pump designation : PE8P120A320LS7838 EP type number : 0 412 628 848

Governor

Governor design. : RQV300...950PA797-23

: 0 421 813 910 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M442 A Engine

1st version kW : 320.0 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 105

Opening |

pressure, bar : 207...210

Orifice plate

: 0,8 diameter mm

Test Lines : 1 680 750 075

Outside diameter

x Wall thickness

: 8.00X2.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30 : (5.15...5.35)

Rack travel in mm : 20.00...21.00 Firing order : 8-7-2-6-3-5-4-1

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 13.80...14.00

Del.quantity cm3/: 22.3...22.5

100 s: (22.0...22.8)

Spread cm3 : 0.6

100 s: (0.9)

rpm : 300.02nd speed Rack travel in mm: 6.2...6.8 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6100 s: (1.0)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300: 1.00...1.50 travel mm

2nd speed : 617 rpm 5.00...5.50 travel mm

3rd speed : 780 rpm

: 6.10...6.60 travel mm

4th speed : 1009 rpm travel mm

: 8.30...8.80 1092 5th speed rpm

travel mm : 9.80...10.30

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1020

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version rpm : 600 Speed Aneroid pressure h: 900 : 223.0...225.0 1000 : (220.0...228.0) Del.quantity Spread cm3 : 6.00 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 120...128 Testing: 1st rack travel in: 13.50 rpm : 990...1000 Speed 2nd rack travel in: 4.00 speed rpm : 1080...1110 4th rack travel in: 1200 Speed rpm LOW IDLE 1 Control lever position degrees: 82...90 Testing: opeed rpm : 200 Minimum rack trave: 7.80 : 300 Speed rpm Rack travel in mm : 6.20...6.80 CONSTANT REGULATION rpm : 300...500 Speed TORQUE CONTROL Dimension a mm : 0.70 : 950 2nd speed rpm Rack travel in m: 14.50...14.70 rpm : 800 3rd speed Rack travel in m: 15.20...15.40 Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 rpm hPa : 900 Pressure : 13.80...14.00 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : 350 Rack travel in m: 9.80...10.00

2nd pressure hPa : 650 Rack travel in m: 12.80...13.00

Rack travel in m: 13.90...14.10 \* 4th pressure hPa : 1350 Rack travel in m: 14.80...15.00 5th pressure hPa : Rack travel in m: 9.30...9.50 START CUT-OUT Speed 1/min : 240 (260) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1600 Speed rpm : 950
Del.quantity cm3/: 234.0...237.0
1000 s: (231.0...240.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: 1600 : 800 Speed rpm Del.quantity cm3/: 243.0...247.0 1000 s: (240.0...250.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: -: 500 Speed rom Del.quantity cm3/: 138.0...140.0 1000 s: (135.0...143.0) cm3 : 8.00 Spread 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 13.50 rpm : 990...1000 Speed STARTING FUEL DELIVERY Speed : 100 rpm Del.quantity cm3/: 220.0...240.0 1000 s: (216.0...244.0) Remarks: \* Increase in control-rod travel with respect to setting at least 0.1 mm

3rd pressure hPa : 1100

Note remarks

: MB 14,7 u 2 : 03.05.91 : 22.3.91 Test sheet Edition Replaces Test oil : ISO-4113

Combination no. : 0 402 648 909

Injection pump

Pump designation : PE8P120A320LS7840 EP type number : 0 412 628 850

Governor

Governor design. : RQ300/950PA971-6 Governer no. : 0 421 801 575

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M442 A

: 250.0 1st version kW Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening.

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter x Wall thickness

: 8.00X2.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 : (5.15...5.35) Prestroke mm

Rack travel in mm : 20.00...21.00 Firing order : 8-7-2-6-3-5-

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

rpm: 600 1st speed

Rack travel in mm : 13.30...13.50

Del.guantity cm3/: 20.6...20.8

100 s: (20.3...21.1)

Spread cm3 : 0.6

100 s: (0.9)

rpm : 300.0 2nd speed Rack travel in mm: 6.2...6.8

Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

Spread cm3 : 0.6 100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2 rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 600 Speed Aneroid pressure h: 900

: 206.0...208.0 Del.quantity 1000 : (203.0...211.0)

: 6.00 cm3 Spread

1000 : (9.00)

RATED SPEED

1st version

Setting point:

: 600 Speed rpm

Rack travel in mm: 20.0 Testing: 1st rack travel in: 12.40 Speed rpm : 990...1005 2nd rack travel in: 4.00 Speed rpm : 1070...1100 4th rack travel in: 1150 rpm : 0.00...1.50 Speed LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 6.5 Testing: rpm : 200 Speed Minimum rack trave: 7.60 Speed rpm : 300 Rack travel in mm : 6.20...6.80 Rack travel in mm: 2.00 Speed man : 380...420 TORQUE CONTROL Dimension a mm : ? 2nd speed rpm : 950 Rack travel in m: 13.40...13.60 3rd speed rpm : 800 Rack travel in m: 14.20...14.40 Aneroid/Altitude Compensator Test 1st version Setting rpm : 600 Speed Pressure hPa : 900 : 13.30...13.50 Rack travel mm Measurement Speed 1/min: 600 1st pressure hPa : 300 Rack travel in m: 11.10...11.30 2nd pressure hPa : 650 Rack travel in m: 12.60...12.80

3rd pressure hPa : 1050
Rack travel in m: 13.40...13.60 \*
4th pressure hPa : 1250 Rack travel in m: 14.00...14.20 5th pressure hPa : -Rack travel in m: 10.60...10.80 FUEL DELIVERY CHARACTERISTICS

Del.quantity cm3/: 204.0...207.0

1000 s: (201.0...210.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: 1500

Speed rpm : 800

Del.quantity cm3/: 220.0...224.0

1000 s: (217.0...227.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: 
Speed rpm : 500

Del.quantity cm3/: 123.0...125.0

1000 s: (120.0...128.0)

Spread cm3 : 8.00

1000 s: (120.0...128.0)

Spread cm3 : 8.00

1000 s: (12.0)

# BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.40 Speed rpm : 990...1005

Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

F26

Speed

1st version

Aneroid pressure h: 1500

rpm : 950

Note remarks

: MB 14,7 u 3 : 03.05.91 Test sheet Edition Replaces : 1.3.91 Test oil : ISO-4113

Combination no. : 0 402 648 910

Injection pump

Pump designation : PE8P120A320LS7840 EP type number : 0 412 628 850

Governor

Governor design. : RQV300...950PA797-26

: 0 421 813 915 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: 04442 A Engine

: 250.0 1st version kW : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 105

Opening.

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter

x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30 : (5.15...5.35) Rack travel in mm : 20.00...21.00

: 8- 7- 2- 6- 3- 5-Firing order

: 0-45-90-135-180-225-Phasing

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. :8

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 13.30...13.50

Del.quantity cm3/: 20.6...20.8

100 s: (20.3...21.1)

cm3 : 0.6Spread

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.2...6.8 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6Spread

100 s: (1.0)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

: 1.00...1.50 travel mm

2nd speed rpm : 617

: 5.00...5.50 travel mm

rpm : 780 3rd speed

travel mm : 6.10...6.60

4th speed rpm : 1009

: 8.30...8.80 travel mm

rpm : 1092 5th speed

: 9.80...10.30 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1020 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version rpm : 600 Speed Aneroid pressure h: 900 : 206.0...208.0 Del.quantity 1000 : (203.0...211.0) Spread cm3 : 6.00 cm3 : 6.00 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 118...126 Testina: 1st rack travel in: 12.40 rpm : 990...1000 Speed 2nd rack travel in: 4.00 rpm : 1070...1100 Speed 4th rack travel in: 1200 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 82...90 Testing: Speed rpm Minimum rack trave: 7.60 rpm : 300 Speed Rack travel in mm : 6.20...6.80 CONSTANT REGULATION rpm : 300...450 Speed TORQUE CONTROL : 0.80 Dimension a mm 2nd speed rpm : 950 Rack travel in m: 13.40...13.60 d speed rpm : 800 3rd speed rpm Rack travel in m: 14.20...14.40 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rpm hPa : 900 Pressure Rack travel mm : 13.30...13.50 Measurement Speed 1/min : 600 1st pressure hPa : 300 Rack travel in m: 11.10...11.30 2nd pressure hPa : 650

Rack travel in m: 12.60...12.80

3rd pressure hPa : 1050 Rack travel in m: 13.40...13.60 \* 4th pressure hPa : 1250 Rack travel in m: 14.00...14.20 5th pressure hPa : -Rack travel in m: 10.60...10.80 START CUT-OUT Speed 1/min: 240 (260) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1500 : 950 Speed rpm Del.quantity cm3/: 204.0...207.0 1000 s: (201.0...210.0) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: 1500 Speed rpm : 800 Del.quantity cm3/: 220.0...224.0 1000 s: (217.0...227.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 123.0...125.0 1000 s: (120.0...128.0) cm3 : 8.00 Spread 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.40 rpm : 990...1000 Speed STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 210.0...230.0 1000 s: (206.0...234.0) Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

Note remarks

Test sheet : MB 12,8 0 3
Edition : 26.04.91
Replaces : 19.3.91
Test oil : ISO-4113

Combination no. : 0 402 648 914

Injection pump

Pump designation : PE8P120A320LS7835

EP type number : 0 412 628 847

Governor

Governor design. : RQV300...1050PA797-

30

Governer no. : 0 421 813 921

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M402 A

1st version kW : 280.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 105

Opening |

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values.\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60

: (5.45...5.65)

Rack travel in mm : 20.00...21.00 Firing order : 8-7-2-6-3-5-

4-1

Phasing : 0-45-90-135-180-225-

270-315

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. :8

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.80...15.00

Del.quantity cm3/ : 22.5...22.7

100 s: (22.2...23.0)

Spread cm3: 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.2...6.8 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3:0.6

100 s: (1.0)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.50...1.00

2nd speed rpm : 625

travel mm : 4.80...5.30

3rd speed rpm : 830

travei mm : 5.90...6.40

4th speed rpm: 1108

travel mm : 8.10...8.60

5th speed rpm : 1190

travel mm : 9.80...10.30

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm: 1130

Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 600 Aneroid pressure h: 1000
Del.quantity : 225.0...227.0
1000 : (222.0...230.0) : 6.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 118...126 Testing: 1st rack travel in: 13.30 rpm : 1090...1100 Speed 2nd rack travel in: 4.00 rpm : 1170...1200 Speed 4th rack travel in: 1250 rpm : 0.00...1.00Speed LOW IDLE 1 Control Lever position degrees: 82...90 Testing: Speed rpm : 200 Minimum rack trave: 7.80 Speed rpm : 300 Rack travel in mm : 6.20...6.80 CONSTANT REGULATION Speed rpm : 300...500 TORQUE CONTROL Dimension a mm : 0.60 2nd speed rpm : 1050 Rack travel in m: 14.30...14.50 3rd speed rpm : 800 Rack travel in m: 15.20...15.40 Aneroid/Altitude Compensator Test 1st version Settina : 600 Speed man hPa : 1000 Pressure Rack travel mm : 14.90...15.00 Measurement 1/min: 600 Speed 1st pressure hPa : 250

Rack travel in m: 10.00...10.20 2nd pressure hPa : 650

Rack travel in m: 13.60...13.80 3rd pressure hPa : 1200 Rack travel in m: 14.90...15.00 \* 4th pressure nPa : Rack travel in m: 9.00...9.30 START CUT-OUT 1/min : 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1500 1000 s: (12.0) Aneroid pressure h: 1500 Speed rpm : 800 Del.quantity cm3/: 232.0...236.0 1000 s: (229.0...239.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -: 500 Speed rpm Del.quantity cm3/: 122.0...124.0 1000 s: (119.0...127.0) cm3 : 8.00Spread 1000 s: (12.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 13.30 rpm : 1090...1100 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 200.0...220.0 1000 s: (196.0...224.0) Remarks: \* Increase in control-rod travel with respect to setting at least 0.1 mm

Note remarks

: № 12,8 o 4 : 26.04.91 : 19.3.91 Test sheet Edition Replaces Test oil : ISO-4113

Combination no. : 0 402 648 915

Injection pump

Pump designation : PE8P120A320LS7835 EP type number : 0 412 628 847

Governor

Governor design. : RQ300/1050PA993-1 : 0 421 801 582 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M402 A

1st version kW : 280.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening |

pressure, bar : 207...210

Orifice plate

diameter mm 8,0:

Test lines : 1 680 750 075

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.50...5.60 : (5.45...5.65) Prestroke mm

Rack travel in mm : 20.00...21.00

Firing order : 8- 7- 2- 6- 3- 5-

: 0-45-90-135-180-225-Phasing

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.80...15.00

Del.quantity cm3/: 22.5...22.7

100 s: (22.2...23.0)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm: 6.2...6.8 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 600 Speed Aneroid pressure h: 1000

Del.quantity : 225.0...227.0 1000 : (222.0...230.0) Spread cm3 : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed : 6CO rpm

Rack travel in mm: 20.0 Testing: 1st rack travel in: 13.30 rpm : 1090...1105 Speed 2nd rack travel in: 4.00 Speed : 1170...1200 rpm 4th rack travel in: 1350 rpm : 0.00...1.50Speed LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm: 6.5 Testing: Speed rpm Minimum rack trave: 7.80 : 300 Speed rpm Rack travel in mm : 6.20...6.80 Rack travel in mm : 2.00 : 380...420 Speed rpm TORQUE CONTROL : 0.50 Dimension a mm 2nd speed rpm : 1050 Rack travel in m: 14.30...14.50 3rd speed rpm : 800 Rack travel in m: 15.20...15.40 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rpm Pressure hPa : 1000 Rack travel mm : 14.80...15.00 Measurement Speed  $1/\min : 600$ 1st pressure hPa : 250 Rack travel in m: 10.00...10.20 2nd pressure hPa : 650 Rack travel in m: 13.60...13.80 3rd pressure hPa : 1200 Rack travel in m: 14.90...15.00 \* 4th pressure hPa : Rack travel in m: 9.00...9.30 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version

G04

Aneroid pressure h: 1500 : 1050 Speed rpm Del.quantity cm3/: 214.0...217.0 1000 s: (211.0...220.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: 1500 : 800 Speed rpm Del.quantity cm3/: 232.0...236.0 1000 s: (229.0...239.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -: 500 Speed rpm Del.quantity\_cm3/ : 122.0...124.0 1000 s: (119.0...127.0) cm3 : 8.00 Spread 1000 s: (12.0)

# BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.30 Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 210.0...230.0 1000 s: (206.0...234.0)

Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

Note remarks

Test sheet : MB 18,3 L 3 Edition : 24.04.91 : 1.2.90 Replaces Test oil : ISO-4113

Combination no. : 0 402 649 810

Injection pump

Pump designation: PE10P120A320LS7809 : 0 412 629 800

EP type number Governor

: RQV350...1050PA870-6 Governor design.

: 0 421 813 766 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

: 0M443 LA Engine

1st version kW : 401.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 130...150

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.00...4.10 Prestroke mm

(3.95...4.15) Rack travel in mm : 20.00...21.00

Firing order : 10- 9- 4- 1- 8- 7-

6-3-5-2

: 0-45-72-117-144-189-Phasing

216-261-288-333 : 0.50 (0.75)

Tolerance + - °

Time to cyl. no. : 10

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.30...14.50

Del.guantity cm3/: 21.0...21.4

100 s: (20.7...21.7)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 350.02nd speed

Rack travel in mm: 6.2...6.8 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6 Spread 100 s: (1.0)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 350 1st speed

: 1.90...2.10 travel mm

rpm : 700 2nd speed

: 4.10...4.50 travel mm

rpm : 1100 3rd speed travel mm

: 7.60...8.00

: 1200 4th speed rpm

: 9.50...9.90 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1100 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 750 4th pressure hPa : 1100 Rack travel in m: 14.80...15.00 : 210.0...214.0 Del.quantity 5th pressure hPa : --1000 : (207.0...217.0) Rack travel in m: 11.10...11.40 : 5.00 cm3 Spread 1000 : (9.00) START CUT-OUT RATED SPEED 1/min : 270 (290) Speed 1st version FUEL DELIVERY CHARACTERISTICS Control lever position degrees: 114...122 1st version Testing: Aneroid pressure h: 1300 1st rack travel in: 14.10 Speed : 1050 rpm Del.quantity cm3/: 224.0...226.0 1000 s: (221.0...229.0) rpm : 1090...1100 2nd rack travel in: 4.00 rpm : 1155...1185 cm3 : 8.00Speed Spread 4th rack travel in: 1300 1000 s: (12.0) rpm : 0.00...1.00Aneroid pressure h: 1300 Speed Speed rpm Del.quantity cm3/: 232.0...236.0 1000 s: (229.0...239.0) LOW IDLE 1 Control lever cm3 : 8.00 position degrees: 64...72 Spread 1000 s: (12.0) Aneroid pressure h: 1300 Testing: Speed Speed : 1050 rpm rpm Del.quantity cm3/: 168.0...170.0 1000 s: (165.0...173.0) Minimum rack trave: 8.60 : 350 Speed rpm Rack travel in mm : 6.20...6.80 cm3 : 8.00 Spread 1000 s: (12.0) CONSTANT REGULATION Aneroid pressure h: -Speed rpm : 500
Del.quantity cm3/ : 132.0...136.0
1000 s: (129.0...139.0) rpm : 300...400 Speed TORQUE CONTROL Dimension a mm : 0.40 Spread cm3 : 8.00nd speed rpm : 1050 Rack travel in m: 15.10...15.30 2nd speed 1000 s: (-) 3rd speed rpm : 800 Rack travel in m: 15.50...15.70 BREAKAWAY Aneroid/Altitude 1st version Compensator Test 1mm rack travel less than full load rack tr: 14.10 1st version Speed rpm : 1090...1100 Setting Speed : 600 STARTING FUEL DELIVERY rpm Pressure hPa : 900 : 14.30...14.50 Rack travel mm Speed rpm : 100 Del.quantity cm3/: 240.0...260.0 1000 s: (236.0...264.0) Measurement  $1/\min : 600$ Speed 1st pressure hPa : 400 Remarks: Rack travel in m: 11.70...11.90 2nd pressure hPa : 550 Rack travel in m: 13.20...13.40 \* Increase in control-rod travel with 3rd pressure hPa : 960 respect to setting at least 0.1 mm Rack travel in m: 14.40...14.50 \*

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BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : SCA 9,0 k 1 : 24.04.91 Test sheet Edition Replaces Test oil : ISO-4113 Combination no. : 0 402 676 810 Injection pump Pump designation : PE6P120A320RS7138 EP type number : 0 412 626 822 Governor Governor design. : RSV350...1050P1A512-Governer no. : 0 421 833 334 Customer-spec. information Customer : SCANIA : DS9 60 Engine TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 019 assembly Opening pressure, bar : 207...210 Orifice plate diameter mm : 0,8 Test lines : 1 680 750 015 Outside diameter x Wall thickness x Length mm : 6.00x1.50x600

(A) Injection pump setting values

per values

BEGINNING OF DELIVERY

Prestroke mm

Test pressure, bar: 25...27

Insp. values in parentheses Set equal delivery quant.

: 4.40...4.50

: (4.35...4.55)

Phasing : 0-60-120-180-240-300 Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 700 Rack travel in mm : 12.20...12.30 Del.quantity cm3/: 16.5...16.7 100 s: (16.2...17.0) Spread cm3 : 0.6100 s: (0.9) 2nd speed rpm : 350.0Rack travel in mm: 4.5...4.9 Del.quantity cm3/: 2.0...2.4 100 s: (-) cm3 : 0.3Spread 100 s: (0.6) GUIDE SLEEVE POSITION Control-lever position Degree: -3 rpm : 800 Speed Rack travel in mm : 0.30...0.70 Governor spring pre-tension Click setting x : 6.00 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 700 : 165.0...167.0 Del.quantity 1000 : (162.0...170.0) : 6.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 109...117 Testing: 1st rack travel in: 11.20 rpm : 1090...1100 Speed 2nd rack travel in: 4.00

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Speed rpm : 1140...1170 4th rack travel in: 1300

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control Lever

position degrees: 76...84

Setting point w/out bumper spring Speed rpm : 350 Rack travel in mm : 4.1

Testing:

Speed rpm : 100 Minimum rack trave: 19.50

Speed rpm : 350
Rack travel in mm : 4.50...4.70
Rack travel in mm : 2.00

Speed rpm : 445...505

## **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 11.20

Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 270.0...320.0

1000 s: (-)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm

Rack travel in mm : 4.50...4.70

Remarks:

Delivery-valve spring pre-tension 3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.

Start-of-delivery setting with ROBO diaphragm.

#### Note remarks

Test sheet : MB 14,7 g 9 Edition : 26.04.91

Replaces

Test oil : ISO-4113

Combination no. : 0 402 678 814

Injection pump

Pump designation : PE8P120A320LS7801-2

EP type number : 0 412 628 825

Governor

: RSV350...1050P0A535-Governor design.

: 0 421 833 352 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

: 0M442LA Engine

: 260.0 1st version kW Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (4.15...5.35)

Rack travel in mm : 9.00...12.00 Firing order : 8-7-2-6-3-5-

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 500

Rack travel in mm : 13.90...14.10

Del.quantity cm3/: 20.1...20.3

100 s: (19.8...20.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0
Rack travel in mm : 5.6...5.8
Del.quantity cm3/ : 1.6...2.2
100 s: (1.3...2.5)
Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 500 Speed Aneroid pressure h: 700

: 201.0...203.0 Del.quantity

1000 : (198.0...206.0) cm3 : 5.00 Spread

1000 : (9.00)

RATED SPEED

1st version Control lever position degrees: 90...98 Testina: 1st rack travel in: 11.50 rpm : 1070...1080 Speed 2nd rack travel in: 4.00 Speed rpm : 1140...1158 4th rack travel in: 1400 rpm : 0.30...1.40Speed LOW IDLE 1 Control lever position degrees: 68...76 Setting point w/out bumper spring Speed rpm : 350 Rack travel in mm : 5.7 Testing: Speed rpm : 100 Minimum rack trave: 19.50 : 350 rpm Rack travel in mm : 5.60...5.80 Rack travel in mm : 2.00 : 360...420 Speed rom SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00 TORQUE CONTROL Torque control curve - 1st version st speed rpm : 1030
Rack travel in m: 12.50...12.70
nd speed rpm : 700
Rack travel in m: 14.20...14.40
rd speed rpm : 900
Rack travel in m: 13.40...13.60 1st speed 2nd speed 3rd speed Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 rpm hPa : 700 Pressure : 13.90...14.10 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : 400 Rack travel in m: 12.30...12.50

2nd pressure hPa : 500

Rack travel in m: 13.20...13.40

3rd pressure hPa : 925

Rack travel in m: 14.00...14.10 \*

## FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 1100 : 1030 Speed rpm Del.quantity cm3/: 181.0...184.0 1000 s: (178.0...187.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: 1100 Speed rpm : 700 Del.quantity cm3/ : 213.0...217.0 1000 s: (210.0...220.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 143.0...145.0 1000 s: (140.0...148.0) Spread cm3 : 8.001000 s: (-)

#### BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.50

rpm : 1070...1080 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 180.0...200.0 1000 s: (176.0...204.0)

## Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

4th pressure hPa

: Rack travel in m: 10.80...11.10

Note remarks

Test sheet : MB 14,7 g10 Edition : 24.04.91

Replaces

Test oil : ISO-4113

: 0 402 678 815 Combination no.

Injection pump

Pump designation : PE8P120A320LS7801-1

EP type number : 0 412 628 818

Governor

Governor design. : RSV650...1200P0A535

Governer no. : 0 421 833 357

Customer-spec. information

: MERCEDES-BENZ Customer

Engine : 0M442A

: 245.0 1st version kW : 2400 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

**Opening** 

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 : (4.15...5.35) Prestroke mm

Rack travel in mm : 9.00...12.00 Firing order : 8-7-2-6-3-5-

: 0-45-90-135-180-225-Phasing

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

rpm: 1180 1st speed

Rack travel in mm: 12.20...12.30

Del.quantity cm3/: 17.0...17.2

100 s: (16.7...17.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 650.0

Rack travel in mm: 4.0...4.6 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5) cm3 : 0.8

Spread

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position Degree: -3

rpm : 800 Speed Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 2.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1180 Speed

Del.quantity : 170.0...172.0 1000 : (167.0...175.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 92...100

Testing:

1st rack travel in: 11.00

Speed rpm : 1215...1225

2nd rack travel in: 4.00

Speed rpm : 1249...1267

4th rack travel in: 1500

Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: 71...79

Setting point w/out bumper spring

Speed rpm : 650

Rack travel in mm: 4.3

Testina:

Speed rpm : 100 Minimum rack trave: 19.50

rpm : 650 Speed

Rack travel in mm : 4.00...4.60 Rack travel in mm : 2.00

Speed rpm : 660...720

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque contiol curve - 1st version

1st speed rpm : 1180

Rack travel in m: 12.20...12.30

2nd speed rpm : 1000

Rack travel in m: 12.40...12.60

3rd speed rpm : 900

Rack travel in m: 12.80...13.00

4th speed rpm : 600

Rack travel in m: 13.50...13.70

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600 Del.quantity cm3/ : 195.0...199.0 1000 s: (192.0...202.0)

: 8.00 Spread cm3

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.00

rpm : 1215...1225 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 170.0...190.0 1000 s: (166.0...194.0)

Remarks:

Note remarks

Test sheet : MB 14,7 g11 Edition : 03.05.91

Replaces : -

Test oil : ISO-4113

Combination no. : 0 402 678 815

Injection pump

Pump designation : PE8P120A320LS7801-1

EP type number : 0 412 628 818

Governor

Governor design. : RSV650...1200POA826-

1

Governer no. : 0 421 833 357

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM/42A

1st version kW : 245.0 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 105

Opening .

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm : 8.00X2.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (4.15...5.35)

Rack travel in mm : 9.00...12.00 Firing order : 8-7-2-6-3-5-

4-1

Phasing : 0-45-90-135-180-225-

270–315

Tolerance  $+ - \circ : 0.50 (0.75)$ 

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 1180

Rack travel in mm : 12.20...12.30

Del.quantity cm3/: 17.0...17.2

100 s: (16.7...17.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 650.0

Rack travel in mm : 4.0...4.6 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3: 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm: 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 2.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1180

Del.quantity : 170.0...172.0

1000 : (167.0...175.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever position degrees: 92...100 Testina: 1st rack travel in: 11.20 Speed rpm : 1215...1225 2nd rack travel in: 4.00 Speed rpm : 1249...1267 4th rack travel in: 1500 Speed rpm : 0.30...1.40 LOW IDLE 1 Control Lever position degrees: 71...79 Setting point w/out bumper spring Speed rpm : 650 Rack travel in mm: 4.3 Testing: Speed rpm : 100 Minimum rack trave: 19.50 Speed rpm : 650
Rack travel in mm : 4.00...4.60
Rack travel in mm : 2.00 Speed rpm : 660...720 SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00 TORQUE CONTROL

Torque control curve - 1st version 1st speed rpm : 1180 Rack travel in m: 12.20...12.30 2nd speed rpm : 1000

Rack travel in m: 12.40...12.60 3rd speed rpm : 900

Rack travel in m: 12.80...13.00 4th speed rpm : 600

Rack travel in m: 13.50...13.70

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 900 Del.quantity cm3/ : 184.0...187.0

1000 s: (181.0...190.0)

Spread cm3 : 8.001000 s: (12.0)

Speed rpm : 600 Del.quantity cm3/: 195.0...199.0

1000 s: (192.0...202.0)

cm3 : 8.00 Spread

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.20 rpm : 1215...1225 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 170.0...190.0 1000 s: (166.0...194.0)

Remarks:

G15

Note remarks

: CUM 5,9 w : 13.05.91 Test sheet Edition : 15.11.90 Replaces : ISO-4113 Test oil

Combination no. : 0 402 736 806

Injection pump

Pump designation : PES6P110A120RS7213

: 0 412 716 804 EP type number

Governor

Governor design. : RQV400...1250PA964K Governor no. : 0 421 815 252

Customer-spec. information Customer : C.D.C.

Engine : 6BTA-A

: 171.5 1st version kW : 2500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 115...125

Test nozzle holder

: 1 688 901 101 assembly

Openting

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

: 1 680 750 008 Test lines

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

: 4.35...4.45 : (4.30...4.50) Prestroke mm

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1250 1st speed

Rack travel in mm : 15.80...15.90

Del.quantity cm3/: 16.8...17.0

100 s: (16.5...17.3)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 400.02nd speed Rack travel in mm : 5.5...5.7 Del.quantity cm3/: 3.2...3.8

100 s: (3.0...4.0)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 0.70...1.10 2nd speed rpm : 400

: 1.40...1.60 travel mm

3rd speed rpm : 600

: 2.90...3.30 travel mm

: 1300 4th speed riom

: 7.20...7.40 travel mm

: 1500 5th speed rpm

: 9.10...9.50 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1250 Speed Aneroid pressure h: 1200

cm3 : 5.00Spread 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 56...64 Testing: 1st rack travel in: 14.80 rpm : 1290...1300 Speed 2nd rack travel in: 4.00 Speed rpm : 1485...1515 4th rack travel in: 1600 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 13...21 Setting point w/out bumper spring Speed rpm : 400 Rack travel in mm: 5.6 Testing: Speed rpm : 275 Minimum rack trave: 7.20 Speed rpm : 400 Rack travel in mm : 5.50...5.70 CONSTANT REGULATION rpm : 325...520 Speed TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version 1st speed rpm : 1250
Rack travel in m: 15.80...15.90 2nd speed rpm : 825
Rack travel in m: 14.60...14.80
3rd speed rpm : 700
Rack travel in m: 14.00...14.40 Aneroid/Altitude Compensator Test

1st version Setting Speed

: 1250 rom hPa : 1200 Pressure

Rack travel mm : 15.80...15.90

Measurement

1/min: 1250 Speed

1st pressure hPa : -

Rack travel in m: 8.00...8.40

2nd pressure hPa : 375

Rack travel in m: 10.00...10.10

3rd pressure hPa : 935 Rack travel in m: 13.60...14.90

START CUT-OUT

1/min: 300 (310) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

: 825 Speed rpm

Del.quantity cm3/: 178.0...184.0 1000 s: (175.0...187.0)

cm3 : 8.00 Spread 1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 87.0...91.0 1000 s: (85.0...93.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 14.80 Speed rpm : 1290...1300 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 155.0...175.0 1000 s: (150.0...180.0)

Rack travel in mm : 12.40...13.40

LOW IDLE

Speed rpm : 400

Rack travel in mm: 5.50...5.70
Del.quantity cm3/: 32.0...38.0
1000 s: (30.0...40.0)
Spread cm3: 8.00

1000 s: (12.00)

Remarks:

: C.D.C. # 3913440

Start-of-delivery mark 6° cam angle

after start of delivery cyl. 1

Note remarks

: CUM 5,9 w 2 Test sheet Edition : 13.05.91 Replaces : 19.3.91

Test oil : ISO-4113

Combination no. : 0 402 736 811

Injection pump

Pump designation : PES6P110A120RS7213

EP type number : 0 412 716 804

Governor

Governor design. : RQV400...1250PA964-3

: 0 421 815 255 Governer no.

Customer-spec. information Customer : C.D.C.

: 6BTA-A Engine

1st version kW : 147.0 : 2500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 115...125

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 4.35...4.45

: (4.30...4.50) Rack travel in mm: 10.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1250 1st speed

Rack travel in mm : 14.80...14.90

Del.quantity cm3/: 15.8...16.0

100 s: (15.5...16.3)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 400.02nd speed Rack travel in mm : 5.5...5.7

Del.quantity cm3/: 3.2...3.8 100 s: (3.0...4.0)

Spread cm3 : 0.8100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm

0.70...1.10 travel mm

2nd speed : 400 rpm

1.40...1.60 travel mm

3rd speed 600 rom

2.90...3.30 travel mm

1300 4th speed rpm

7.20...7.40 travel mm

1500 5th speed rpm

travel mm : 9.10...9.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Aneroid pressure h: 1200

Del.quantity

: 158.5...160.5 1000 : (155.5...163.5)

cm3 : 5.00 1000 : (9.00) Spread cm3

## RATED SPEED

1st version Control lever

position degrees: 56...64

Testing:

1st rack travel in: 13.80

rpm : 1290...1300 Speed

2nd rack travel in: 4.00

rpm : 1460...1490 Speed

4th rack travel in: 1600

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 12...20

Setting point w/out bumper spring

Speed rpm : 400 Rack travel in mm : 5.6

Testina:

Speed rpm : 275 Minimum rack trave: 7.20

rpm : 400

Rack travel in mm : 5.50...5.70

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1250

Rack travel in m: 14.80...14.90

2nd speed rpm : 800

Rack travel in m: 13.20...13.40

Aneroid/Altitude

Compensator Test

1st version

Setting

: 1250 Speed rpm hPa : 1200 Pressure

Rack travel mm : 14.80...14.90

Measurement

1/min: 1250 Speed

1st pressure hPa : -

Rack travel in m: 8.20...8.60

2nd pressure hPa : 410

Rack travel in m: 10.00...10.10 3rd pressure hPa : 755

Rack travel in m: 13.20...13.60

START CUT-OUT

1/min: 290 (300) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm : 800 Del.quantity cm3/ : 156.5...162.5 1000 s: (153.5...165.5)

cm3 : 8.00 Spread

1000 s: (12.0) Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 90.0...94.0 1000 s: (88.0...96.0)

## BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.80

rpm : 1290...1300 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 140.0...160.0

1000 s: (135.0...165.0)

Rack travel in mm : 11.90...12.90

LOW IDLE

: 400 rpm

Rack travel in mm : 5.50...5.70

Del.quantity cm3/: 32.0...38.0 1000 s: (30.0...40.0)

Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

: C.D.C # 3918321

Start-of-delivery mark = 5.5° after

start of delivery cyl. 1.

Note remarks

Test sheet : MB 11,8 s 2 Edition : 24.04.91

Replaces

Test oil : ISO-4113

Combination no. : 0 402 746 906

Injection pump

Pump designation : PES6P12OA720LS7196

EP type number : 0 412 726 831

Governor

Governor design. : RQV450...1050PA985

: 0 421 813 917 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M447 h LA

1st version kW : 304.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

: 1 680 750 067 Test lines

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm

: (4.95...5.15)

Rack travel in mm : 19.00...21.00 Firing order : 6-2-4-1-5-3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no.

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 15.20...15.40

Del.quantity cm3/: 28.4...28.6

100 s: (28.1...28.9)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 450.0 2nd speed

Rack travel in mm: 4.0...4.6

Del.quantity cm3/: 1.0...1.6 100 s: (0.7...1.9)

cm3 : 0.8 Spread 100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 450

: 1.10...1.60 travel mm

2nd speed rpm : 650

: 3.50...4.00 travel mm

: 940 3rd speed rpm

: 5.50...6.00 travel mm

4th speed : 1107 rom

: 7.30...7.80 travel mm

5th speed rpm : 1226

: 9.80...10.30 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1150 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version rpm : 600 Speed Ameroid pressure h: 950 Del.quantity : 284.0...286.0 1000 : (281.0...289.0) : 5.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Control Lever position degrees: 113...121 Testing: 1st rack travel in: 14.40 Speed rpm : 1090...1100 2nd rack travel in: 4.00 Speed rpm : 1180...1210 4th rack travel in: 1300 Speed Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 61...69 Testina: Speed : 300 rpm Minimum rack trave: 5.90 rpm : 450 Rack travel in mm : 4.00...4.60 CONSTANT REGULATION rpm : 450...650 Speed TORQUE CONTROL Dimension a mm : 0.60 : 1050 2nd speed rpm Rack travel in m: 15.40...15.60 3rd speed : 900 rpm Rack travel in m: 15.70...15.90 4th speed rpm : 800 Rack travel in m: 16.00...16.20 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rom hPa : 950 Pressure Rack travel mm : 15.20...15.40 Measurement Speed 1/min: 600 1st pressure hPa : 300 Rack travel in m: 12.60...12.80 2nd pressure hPa : 600

Rack travel in m: 14.50...14.70 3rd pressure hPa : 1200 Rack travel in m: 16.30...16.50 4th pressure hPa : Rack travel in m: 9.80...10.20 START CUT-OUT Speed 1/min : 370 (390) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1600 Speed rpm : 1050 Del.quantity cm3/ : 280.0...283.0 1000 s: (277.0...286.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: 1600 Speed rpm : 800 Del.quantity cm3/: 298.0...302.0 1000 s: (295.0...305.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 145.0...147.0 1000 s: (142.0...150.0) Spread cm3 : 8.00 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 14.40 : 1090...1100 Speed rom STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 280.0...300.0 1000 s: (276.0...304.0) Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks

Test sheet : RVI 9,8 n Edition : 24.04.91 Replaces

Test oil : ISO-4113

Combination no. : 0 402 746 907

Injection pump

Pump designation : PES6P120A320RS7231 EP type number : 0 412 726 844

Governor

Governor design. : RQV275...1000PA927-1

: 0 421 813 923 Governer no.

Customer-spec. information Customer : RVI

: MIDR 06-20-45 Engine

: 249.0 1st version kW : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

: 8.00X2.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.65...4.75 : (4.60...4.80)

Rack travel in mm : 13.50...14.50 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 600

Rack travel in mm: 13.90...14.00

Del.quantity cm3/: 24.6...24.8

100 s: (24.3...25.1)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 275.0 Rack travel in mm : 4.5...4.9 Del.quantity cm3/ : 2.3...2.9 100 s: (2.0...3.2)

Spread cm3 : 0.8100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1060

: 8.10...8.30 rpm : 275 travel mm 2nd speed

travel mm

: 1.10...1.50

3rd speed rpm : 500

: 3.60...4.20 travel mm

4th speed man : 750

: 5.70...6.10 travel mm

5th speed rpm : 1400

travel mm : 11.00...12.00

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1065

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 1000

Del.quantity : 246.0...248.0 1000 : (243.0...251.0)

: 5.00 cm3 Spread 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 297...305 Testing: 1st rack travel in: 12.90 rpm : 1055...1065 Speed 2nd rack travel in: 4.00 rpm : 1185...1215 Speed 4th rack travel in: 1300 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 242...250 Testing: rpm Speed : 200 Minimum rack trave: 5.90 : 275 riom Rack travel in mm : 4.60...4.80 CONSTANT REGULATION rpm : 310...430 Speed Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed npm hPa : 1000 Pressure : 13.90...14.00 Rack travel mm Measurement Speed 1/min: 500 1st pressure hPa : -

Rack travel in m: 9.90..10.30 2nd pressure hPa : 600 Rack travel in m: 13.10...13.20 3rd pressure hPa : 200 Rack travel in m: 10.70...11.10 START CUT-OUT 1/min: 225 (245) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000

Del.quantity cm3/: 240.0...246.0 1000 s: (237.0...249.0) : 500 Speed rpm Aneroid pressure h: -: 500 **beea**2 rpm Del.quantity cm3/: 138.0...140.0 1000 s: (135.0...143.0) BREAKAWAY 1st version 1mm rack travel less than

full load rack tr: 12.90 Speed rpm : 1055...1065

STARTING FUEL DELIVERY

: 100 Speed rpm Del.quantity cm3/: 135.0...165.0 1000 s: (131.0...169.0)

LOW IDLE

: 275 Speed rpm Rack travel in mm : 4.50...4.90 Del.quantity cm3/: 23.0...29.0 1000 s: (20.0...32.0)

cm3 : 8.00 Spread 1000 s: (12.00)

Remarks:

FEHLENDEN TEXT UBERSETZEN

rpm : 1000 Speed

G23

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MAC 12,0 m Edition : 13.05.91 Replaces Test oil : ISO-4113 Combination no. : 0 402 746 911 Injection pump Pump designation : PES6P120A720RS7239 : 0 412 726 850 EP type number Governor Governor design. : RQV325...900PA944-13 : 0 421 815 284 Governer no. Customer-spec. information : MACK TRUCKS Customer : E7-350 ITC Engine 1st version kW : 261.0 Rated speed : 1800 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 2 417 413 011 Overflow quantity min. 1/h: 160...170 Test nozzle holder : 1 688 901 101 assembly Openina pressure, bar : 207...210 Orifice plate diameter mm : 0,6 Test lines : 1 680 750 008 Outside diameter x Wall thickness x Length mm : 6.00x2.00x600 (A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 22...24 : 3.25...3.35 Prestroke mm : (3.20...3.40) Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 : 0-60-120-180-240-300 Phasina Phasing Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING rpm: 900 1st speed Rack travel in mm : 12.80...12.90 Del.quantity cm3/: 23.1...23.3 100 s: (22.8...23.6) cm3 : 0.5 Spread 100 s: (0.9) 2nd speed rpm : 325.0 Rack travel in mm : 5.0...5.2 Del.quantity cm3/: 4.6...5.2 100 s: (4.4...5.4) Spread cm3 : 0.8100 s: (1.2) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed : 325 : 1.20...1.40 rpm : 450 travel mm 2nd speed : 2.80...3.20 travel mm 3rd speed : 650 rpm : 5.60...5.80 travel mm rpm : 900 4th speed travel mm : 8.30...8.50 : 1100 5th speed rpm : 10.30...10.80 travel mm FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 900 Speed Aneroid pressure h: 1200 : 231.5...233.5 1000 : (228.5...236.5) Del.quantity

: 5.00

1000 : (9.00)

cm3

Spread

RATED SPEED

1st version Control Lever

position degrees: 58...66

Testing:

1st rack travel in: 11.80 Speed rpm : 940...990

2nd rack travel in: 4.00

Speed rom : 1090...1100

4th rack travel in: 1200

: 0.00...1.00 Speed rom

LOW IDLE 1 Control lever

position degrees: 8...16

Testina:

Speed rpm Minimum rack trave: 6.20 : 325 Speed man

Rack travel in mm : 5.00...5.20

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

rpm : 900 1st speed

Rack travel in m: 12.80...12.90

npm : 625 2nd speed

Rack travel in m: 12.70...12.90 3rd speed rpm : 500 Rack travel in m: 10.70...11.10

Aneroid/Altitude Compensator Test

1st version Setting

Speed : 900 rpm hPa : 1200 Pressure

Rack travel mm : 12.80...12.90

Measurement

1/min: 900 Speed

1st pressure hPa : -

Rack travel in m: 7.40...7.80

2nd pressure hPa : 365

Rack travel in m: 8.90...9.00

3rd pressure hPa : 665

Rack travel in m: 11.30...11.70

START CUT-OUT

1/min: 250 (255) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 Speed : 625 rpm

Del.quantity cm3/: 266.5...272.5 1000 s: (263.5...275.5)

Spread cm3 : 8.00 1000 s: (12.0)

Speed rpm : 875

Del.quantity cm3/: 199.0...201.0 \* 1000 s: (180.5...207.0)

Aneroid pressure h: -

Speed rpm : 400 Del.quantity cm3/: 147.5...151.5 1000 s: (145.5...153.5)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 11.80

rpm : 940...990

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 220.0...250.0 1000 s: (215.0...255.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 325

Rack travel in mm : 5.00...5.20 Del.quantity cm3/: 46.5...52.5

1000 s: (44.5...54.5)

cm3 : 8.00 Spread

1000 s: (12.00)

Remarks:

: MACK # 313GC52D3-P8

У

FEHLENDEN TEXT ÜBERSETZEN Y

Bow dimension:

Sliding-sleeve position = 37.0 mm \* This test specification applies only to the engine/nozzle-and-holder assemblies on an injection pump test bench: setting for test equipment, check value for engine equipment.

Note remarks

Test sheet : MAC 12,0 m1 Edition : 13.05.91

Replaces

Test oil : ISO-4113

Combination no. : 0 402 746 912

Injection pump

Pump designation : PES6P120A720RS7239

EP type number : 0 412 726 850

Governor

: RQV325...875PA944-14 Governor design.

: 0 421 815 285 Governer no.

Customer-spec. information

Customer : MACK TRUCKS

: EM7-300 ITC Engine

: 224.0 1st version kW : 1750 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

: 3.25...3.35 Prestroke mm

: (3.20...3.40)
Rack travel in mm : 11.00...13.00
Firing order : 1-5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no.

BASIC SETTING

1st speed rpm: 875

Rack travel in mm : 11.70...11.60

Del.quantity cm3/: 22.4...22.6

100 s: (22.1...22.9)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 325.0 2nd speed Rack travel in mm : 4.4...4.6

Del.quantity cm3/: 4.6...5.2 100 s: (4.4...5.4)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm

1.70...1.90 travel mm

2nd speed 450 rpm

4.20...4.60 travel mm

3rd speed 650 rpm

travel mm 8.00...8.40

4th speed 900 rpm

10.00...10.20 travel mm

1000 5th speed rpm

10.80...11.20 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 875

Aneroid pressure h: 1200

Aneroiu ... Del.quantity 1000 : 224.5...226.5

: (221.5...229.5)

: 5.00 Spread Cm3

1000 ; (9.00)

**G27** 

RATED SPEED 1st version Control lever position degrees: 63...71 Testing: 1st rack travel in: 10.70 Speed rpm : 915...965 2nd rack travel in: 4.00 rpm : 1025...1035 Speed 4th rack travel in: 1200 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 9...17 Testing: Speed : 275 rpm Minimum rack trave: 6.00 rom : 325 Rack travel in mm : 4.40...4.60 CONSTANT REGULATION Speed rpm : 325...520 TORQUE CONTROL Dimension a mm : ? Torque control curve - 1st version mpm : 875 1st speed Rack travel in m: 11.70...11.80 2nd speed rpm : 510 Rack travel in m: 13.40...13.60 3rd speed rpm : 450 Rack travel in m: 12.30...12.70 Aneroid/Altitude Compensator Test 1st version Setting Speed : 510 rom hPa : 1200 Pressure : 13.40...13.60 Rack travel mm Measurement Speed 1/min: 510 1st pressure hPa : -Rack travel in m: 7.10...7.50 2nd pressure hPa : 370 Rack travel in m: 8.70...8.80 3rd pressure hPa : 730 Rack travel in m: 11.50...11.90

FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 Speed rpm : 510 Del.quantity cm3/: 331.5...337.5 1000 s: (328.5...340.5) cm3 : 8.00 Spread 1000 s: (12.0) : 875 Speed rpm Del.quantity cm3/: 199.0...201.0 \* 1000 s: (159.5...183.0) Aneroid pressure h: -Speed rpm : 400 Del.quantity cm3/ : 160.0...164.0 1000 s: (158.0...166.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.70 rpm : 915...965 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 205.0...245.0 1000 s: (200.0...250.0) Rack travel in mm : 19.00...21.00 LOW IDLE : 325 Speed rpm Rack travel in mm : 4.40...4.60 Del.quantity cm3/: 46.0...52.0 1000 s: (44.0...54.0) cm3 : 8.00 Spread 1000 s: (12.00) Remarks: : MACK # 313GC52O3-P6 FEHLENDEN TEXT UBERSETZEN У Bow dimension: Sliding-sleeve position = 37.0 mm \* This test specification applies only to the engine/nozzle-and-holder assemblies on an injection-pump test bench: setting for test equipment, check value for engine equipment.

1/min : 250 (255)

Speed

START CUT-OUT

Note remarks

Test sheet : MB 11,8 t : 26.04.91 Edition

Replaces

: ISO-4113 Test oil

: 0 402 746 914 Combination no.

Injection pump

Pump designation : PES6P120A720LS7238

EP type number : 0 412 726 852

Governor

Governor design. : RQ300/1100PA1008

Governer no. : 0 421 801 591

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M447 hLA Engine

: 220.0 1st version kW Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

**Opening** 

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.50...5.60 : (5.45...5.65) Prestroke mm

Rack travel in mm : 20.00...21.00

: 6-2-4-1-5-3 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.00...14.20

Del.quantity cm3/: 21.3...21.5

100 s: (21.0...21.8)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300.02nd speed Rack travel in mm: 6.5...7.1

Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.8Spread

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 600

: 213.0...215.0 Del.quantity 1000 : (210.0...218.0)

: 5.00 cm3 Spread

1000 : (9.00)

RATED SPEED

1st version

Setting point:

: 600 rpm

Rack travel in mm: 20.0

H<sub>0</sub>2

Testing: 1st rack travel in: 13.60 rpm : 1145...1160 Speed 2nd rack travel in: 4.00 rpm : 1220...1250 Speed 4th rack travel in: 1300 Speed rpm : 0.00...1.50LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 6.8 Testing: Speed rpm : 200 Minimum rack trave: 8.70 : 300 Speed rom Rack travel in mm : 6.50...7.10 Rack travel in mm : 2.00 : 370...410 Speed rpm Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 rpm hPa : 600 Pressure : 14.00...14.20 Rack travel mm Measurement  $1/\min : 600$ Speed 1st pressure hPa : 150 Rack travel in m: 12.20...12.40 2nd pressure hPa : 400 Rack travel in m: 13.60...13.80 3rd pressure hPa : 800 Rack travel in m: 14.20...14.40 4th pressure hPa : 1100 Rack travel in m: 15.10...15.30 5th pressure hPa Rack travel in m: 11.70...12.00 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1400 : 1100 Speed LDW. Del.quantity cm3/: 229.0...232.0 1000 s: (226.0...235.0) Spread cm3: 8.00 1000 s: (12.0) Aneroid pressure h: 1400 rpm : 700 Speed Del.quantity cm3/: 238.0...242.0 1000 s: (235.0...245.0) Spread cm3 : 8.00 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.60

Speed rpm : 1145...1160

Remarks:

Note remarks

Test sheet : VOL 7,1 f Edition : 24.04.91

Replaces

Test oil : ISO-4113

Combination no. : 0 402 846 050

Injection pump

Pump designation : PE6P110A320RS8009 EP type number : 0 412 816 010

Governor

Governor design. : RQV250...1200PA953K

: 0 421 815 996 Governer no.

Customer-spec. information

: VOLVO-TRUCK Customer

: TD73EB Engine

1st version kW : 184.0 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 064

Inlet press., bar: 2.50

Overflow

quantity min. 1/h: 100...110

Test nozzle holder

: 1 688 901 101 assembly

Opening .

pressure, bar : 207...210

Orifice plate

diameter mm : 0.6

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.80...3.90 Prestroke mm

: (3.75...3.95)

Rack travel in mm : 9.00...12.00

Firing order : 1-5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm : 12001st speed

Rack travel in mm : 12.30...12.40

Del.quantity cm3/: 16.4...16.6

100 s: (16.2...16.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 4.7...5.1 Del.quantity cm3/ : 2.1...2.5 100 s: (1.8...2.8)

cm3 : 0.7Spread 100 s: (1.1)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

: 1.10...1.50 travel mm

: 400 2nd speed rom

: 3.00...3.60 travel mm 3rd speed : 850

rpm : 6.70...7.30 travel mm

4th speed : 1250

rpm

: 10.30...10.50 travel mm

rpm : 13505th speed

travel mm : 11.40...11.80

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1240 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Speed rpm : 1200 Aneroid pressure h: 1200 : 164.0...166.0 Del.quantity 1000 : (162.0...168.0) cm3 : 5.00 Spread 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 117...125 Testing: 1st rack travel in: 11.30 rpm : 1260...1270 Speed 2nd rack travel in: 4.00 Speed rpm: 1350...1380 4th rack travel in: 1450 Speed Speed rpm : 0.00...1.00 LOW IDLE 1 Control lever position degrees: 69...77 Testina: Speed והמו : 100 Minimum rack trave: 6.40 rpm : 300 Rack travel in mm : 4.70...4.90 CONSTANT REGULATION rpm : 300...450 Speed TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version rpm : 1200 1st speed Rack travel in m: 12.30...12.40 rpm : 700 2nd speed Rack travel in m: 12.00...12.20 rpm : 850 3rd speed Rack travel in m: 12.20...12.40 rpm : 350 4th speed Rack travel in m: 10.80...11.10 Ameroid/Altitude Compensator Test 1st version Setting : 1000 Speed rpm hPa : 1200 Pressure : 12.30...12.40 Rack travel mm Measurement 1/min: 1000 Speed

1st pressure hPa : Rack travel in m: 7.30...7.50 2nd pressure hPa : 90 Rack travel in m: 7.50...7.60 3rd pressure hPa : 830 Rack travel in m: 11.90...12.10 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 : 700 Speed rom Del.quantity cm3/: 195.0...199.0 1000 s: (192.0...202.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm: 700
Del.quantity cm3/: 99.0...101.0
1000 s: (96.0...104.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.30 rpm : 1260...1270 Speed LOW IDLE Speed rpm : 300 Rack travel in mm : 4.70...4.90 Remarks:

Note remarks

: VOL 7,1 f 1 Test sheet : 24.04.91 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 846 051

Injection pump

: PE6P110A320RS8009 Pump designation

EP type number : 0 412 816 010

Governor

Governor design. : RQV250...1200PA953-1

: 0 421 815 995 Governer no.

Customer-spec. information

Customer : VOLVO-TRUCK

Engine : TD73EA

: 158.0 1st version kW Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 064

Inlet press., bar: 2.50

Overflow

quantity min. 1/h: 100...110

Test nozzle holder

assembly : 1 688 901 101

**Opening** 

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.80...3.90 : (3.75...3.95) Prestroke mm

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1200

Rack travel in mm : 11.70...11.80

Del.quantity cm3/: 15.2...15.4

100 s: (15.0...15.6)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.02nd speed Rack travel in mm: 4.7...5.1

Del.quantity cm3/: 2.1...2.5 100 s: (1.8...2.8)

cm3 : 0.7

100 s: (1.1)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

Spread

rpm : 250 1st speed

: 1.10...1.50 travel mm

rpm : 400 2nd speed

travel mm : 3.00...3.60

3rd speed : 850 rpm

: 6.70...7.30 travel mm 4th speed 1250 rpm

travel mm : 10.30...10.50

rpm : 1350 5th speed travel mm : 11.40...11.80

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1240 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version rpm : 1200 Speed Aneroid pressure h: 1200 : 152.0...154.0 Del.quantity 1000 : (150.0...156.0) : 5.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 117...125 Testina: 1st rack travel in: 10.70 Speed rpm : 1260...1270 2nd rack travel in: 4.00 Speed rpm: 1330...1360 4th rack travel in: 1450 Speed rpm : 0.00...1.00LOW IDLE 1 Control Lever position degrees: 69...77 Testing: : 100 Speed rpm Minimum rack trave: 6.40 : 300 Speed rpm Rack travel in mm : 4.70...4.90 CONSTANT REGULATION rpm : 300...450 Speed TORQUE CONTROL Dimension a mm Torque control curve - 1st version rpm : 1200 1st speed Rack travel in m: 11.70...11.80 : 700 2nd speed rom Rack travel in m: 10.40...10.60 rpm : 1000 3rd speed Rack travel in m: 11.70...11.90 rpm : 350 4th speed Rack travel in m: 9.70...9.90 Aneroid/Altitude Compensator Test 1st version Setting Speed : 1000 rpm Pressure hPa : 1200 : 11.70...11.80 Rack travel mm Measurement

1/min: 1000

1st pressure hPa : -Rack travel in m: 7.30...7.50 2nd pressure hPa : 90 Rack travel in m: 0.20...0.30 3rd pressure hPa : 740 Rack travel in m: 3.90...4.10 START CUT-OUT 1/min: 170 (190) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 Speed rpm : 700
Del.quantity cm3/: 158.0...162.0
1000 s: (155.0...165.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 700 Del.quantity cm3/ : 99.0...101.0 1000 s: (96.0...104.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.70 rpm : 1260...1270 Speed LOW IDLE : 300 rpm Rack travel in mm : 4.70...4.90 Remarks:

H07

Speed

Note remarks

: MB 4,0 H 1 Test sheet Edition : 24.04.91 : 18.02.91 Replaces Test oil : ISO-4113

Combination no. : 0 403 444 120

Injection pump

Pump designation : PES4MW100/720RS1151

EP type number : 0 413 404 104

Governor

Governor design. : RQ300/1300MW105-2 : 0 420 082 051 Governer no.

Customer-spec. information Customer : MB-NFZ

: 0M364A Engine

1st version kW : 87.0 : 2600 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80 : (3.65...3.85)

Rack travel in mm : 9.00...12.00

**H08** 

Firing order : 1-3-4-2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 13001st speed

Rack travel in mm : 12.30...12.40

Del.quantity cm3/: 9.8...10.0

100 s: (9.6...10.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0Rack travel in mm: 6.3...6.5 Del.quantity cm3/: 1.0...1.4 100 s: (0,7...1.6)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

: 1400 1st speed : 7.30...7.70 travel mm

: 1300 2nd speed rpm

: 6.10...6.30 travel mm

3rd speed : 550 rpm

: 5.70...6.30 travel mm

: 300 4th speed rpm

: 2.10...2.50 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: 107

rpm : 800

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1300 Speed Aneroid pressure h: 700

: 98.0...100.0 Del.quantity

1000 : (96.0...102.0)

: 3.50 cm3 Spread

1000 : (6.00)

RATED SPEED

Control lever Speed position degrees: 89...97 Setting point: Speed : 800 Rack travel in mm: 20.0 Testing: Speed 1st rack travel in: 11.30 Speed rpm : 1345...1360 2nd rack travel in: 4.00 Spread rpm : 1440...1470 Speed 4th rack travel in: 1550 Speed rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 69...77 Setting point w/out bumper spring Speed rpm Rack travel in mm: 6.4 Testing: Speed : 200 rpm Minimum rack trave: 8.00 Speed : 300 rpm Speed Rack travel in mm : 6.30...6.50 TORQUE CONTROL Dimension a mm : 0.50 Speed Torque control curve - 1st version rpm : 1300 1st speed Rack travel in m: 12.30...12.40 2nd speed rpm : 600 Rack travel in m: 12.80...12.90 3rd speed rpm : 1100 Rack travel in m: 12.40...12.70 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : -Pressure : 11.00...11.10 Rack travel mm Measurement 1/min : 500 Speed 1st pressure hPa : 200 Rack travel in m: 11.70...11.80 2nd pressure hPa : 300 Rack travel in m: 12.30...12.60 3rd pressure hPa : 700 Rack travel in m: 12.80...12.90 START CUT-OUT

1/min : 200 (230) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 : 600 rpm Del.quantity cm3/: 87.0...90.0 1000 s: (84.5...92.5) cm3 : 5.001000 s: (7.0) Aneroid pressure h: rpm Del.quantity cm3/: 59.0...61.0 1000 s: (57.0...63.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.30 rpm : 1345...1360 STARTING FUEL DELIVERY rpm : 100 Del.quantity cm3/: 90.0...100.0 1000 s: (87.0...103.0) LOW IDLE Speed rpm : 300 Rack travel in mm : 6.30...6.50 Del.quantity cm3/: 10.0...14.0 1000 s: (7.5...16.5) Spread cm3 : 3.50 1000 s: (5.50) Remarks:

H09

1st version

Note remarks

Test sheet : MB 4,0 H 5 Edition : 26.04.91 Replaces : 18.02.91 : ISO-4113 Test oil

Combination no. : 0 403 444 125

Injection pump

Pump designation : PES4MW100/720RS1151

: 0 413 404 104 EP type number

Governor

Governor design. : RQV300...1300MW67-3

: 0 420 083 242 Governer no.

Customer-spec. information Customer : MB-NFZ

Engine : OM 364 LA

1st version kW : 102.0 : 2600 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening 1

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80

: (3.65...3.85)

Rack travel in mm : 9.00...12.00

H10

Firing order : 1-3-4-2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 1300 1st speed

Rack travel in mm : 12.70...12.80

Del.guantity cm3/: 9.8...10.0

100 s: (9.6...10.2)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 300.02nd speed Rack travel in mm: 6.8...7.0

Del.quantity cm3/: 1.0...1.4

100 s: (0.7...1.6)

Spread cm3: 0.3

100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350

: 8.40...8.80 travel mm rpm : 880 2nd speed

: 4.90...5.10 travel mm

3rd speed rpm : 500

: 2.70...3.30 travel mm

rpm : 300 4th speed

: 1.20...1.60 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1349 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1300 Speed

Aneroid pressure h: 700

Del.quantity : 98.0...100.0 1000 : (96.0...102.0)

: 3.50 cm3

1000 : (6.00)

RATED SPEED

Spread

1st version Spread Control lever position degrees: 117...125 Testing: 1st rack travel in: 11.70 rpm : 1340...1350 Speed 2nd rack travel in: 4.00 Speed rpm : 1445...1475 4th rack travel in: 1550 rom : 0.00...1.00Speed BREAKAWAY LOW IDLE 1 Control lever position degrees: 83...91 Setting point w/out bumper spring rpm : 300 Speed Rack travel in mm: 6.9 Speed Testina: Speed rpm : 200 Minimum rack trave: 8.50 rpm : 300 Speed Rack travel in mm : 6.80...7.00 CONSTANT REGULATION rpm : 320...550 Speed LOW IDLE Aneroid/Altitude Compensator Test 1st version Setting rom : 500 hPa : 200 Speed rpm Pressure Remarks: Rack travel mm : 11.30...11.40 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 10.60...10.70 2nd pressure hPa : 335 Rack travel in m: 12.10...12.40 3rd pressure hPa : 700 Rack travel in m: 12.70...12.80 START CUT-OUT 1/min: 220 (250) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 Speed rpm : 600 Del.quantity cm3/: 82.5...85.5 1000 s: (80.0...88.0)

cm3 : 5.00 1000 s: (7.0)

Speed rpm : 1300

Del.quantity cm3/: 66.0...68.0

1000 s: (64.0...70.0) Aneroid pressure h: Speed rpm: 500
Del.quantity cm3/: 49.0...51.0
1000 s: (47.0...53.0)

1st version 1mm rack travel less than

full load rack tr: 11.70 rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 85.0...95.0 1000 s: (82.0...98.0)

Speed rpm : 300 Rack travel in mm : 6.80...7.00 Del.quantity cm3/: 10.0...14.0 1000 s: (7.5...16.5) Spread cm3 : 3.50 1000 s: (5.50)

Note remarks

: AIF 5,9 A Test sheet Edition : 24.04.91 : 12.04.90 Replaces

Test oil : ISO-4113

Combination no. : 0 403 446 238

Injection pump

Pump designation : PES6MW100/720RS1188

EP type number : 0 413 406 175

Governor

: RQV300...1350MW106 Governor design.

: 0 420 083 200 Governer no.

Customer-spec. information Customer : AIFO

: 8061.25.051 Engine

: 210.0 1st version kW Rated speed : 2700

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 909

Opening 1 and 1

: 172...175 pressure, bar

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10 : (2.95...3.15) Rack travel in mm : 11.50...14.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1350

Rack travel in mm : 10.50...10.60

Del.quantity cm3/: 12.4...12.6

100 s: (12.2...12.8)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 300.0
Rack travel in mm : 5.9...6.1
Del.quantity cm3/ : 1.1...1.5
100 s: (0.8...1.7)
Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

: 1530 1st speed : 9.00...9.20 travel mm

2nd speed : 1400 rpm

travel mm : 7.80...8.20 : 600

3rd speed **FDM** : 2.90...3.50 travel mm

rpm : 300 4th speed

travel mm : 1.00...1.40

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1450

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed : 1350 rpm

124.0...126.0 Del.quantity

1000 : (122.0...128.0)

3.50 cm3 Spread 1000 (6.00)

RATED SPEED

1st version

Control lever position degrees: 118...126 Testing: 1st rack travel in: 9.50 rpm : 1380...1390 Speed 2nd rack travel in: 4.00 Speed rpm : 1485...1515 4th rack travel in: 1575 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 84...92 Setting point w/out bumper spring Speed Rack travel in mm: 6.0 Testing: Speed rpm : 200 Minimum rack trave: 7.50 Speed rpm : 300 Rack travel in mm : 5.90...6.10 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 800 Del.quantity sm3/ : 117.5...120.5 1000 s: (115.0...123.0) cm3 : 5.00Spread 1000 s: (7.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 9.50 rpm : 1380...1390 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 80.0...90.0 1000 s: (77.0...93.0) Rack travel in mm: 10.50...10.60 LOW IDLE Speed rpm : 300
Rack travel in mm : 5.90...6.10
Del.quantity cm3/ : 11.0...15.0
1000 s: (8.5...17.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

Note remarks

Test sheet : IHC 7,6 X : 24.04.91 Edition : 28.09.90 Replaces : ISO-4113 Test oil

Combination no. : 0 403 446 239

Injection pump

Pump designation : PES6MW100/320RS1189

EP type number : 0 413 406 177

Governor

Governor design. : RQV350...1200MW46-21

Governer no. : 0 420 083 201

Customer-spec. information : NAVISTAR Customer

: DTA-466 Engine

1st version kW : 186.0 : 2400 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 038

Inlet press., bar: 2.80

Test nozzle holder

: 1 688 901 101 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.25...3.35 : (3.20...3.40) Prestroke mm

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + ~ ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 800

Rack travel in mm : 14.00...14.10

Del.quantity cm3/: 15.2...15.4

100 s: (15.0...15.6)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 350.02nd speed

Rack travel in mm: 5.3...5.5

Del.quantity cm3/: 1.6...2.0 100 s: (1.3...2.2)

cm3 : 0.3

Spread 100 s: (0.5)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 1450 1st speed

: 9.80...10.20 travel mm

rpm : 1250 2nd speed

: 7.90...8.10 travel mm

: 550 3rd speed rpm

: 3.10...3.70 : 350 travel mm

4th speed rpm

: 1.30...1.70 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 800 Aneroid pressure h: 900

Aneroid F. Del.quantity 1000 : 152.0...154.0

: (150.0...156.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 104...112

Testing:

1st rack travel in: 13.00

грт : 1280...1300 Speed

2nd rack travel in: 4.00

rpm : 1435...1445 Speed

4th rack travel in: 1550

rpm : 0.00...1.00 Speed

LOW IDLE 1

Control lever

position degrees: 68...76

Setting point w/out bumper spring

Speed rpm : 350 Rack travel in mm : 5.4

Testing:

Speed : 100 rpm

Minimum rack trave: 9.00

rpm : 350

Rack travel in mm : 5.30...5.50

CONSTANT REGULATION

Speed rpm : 300...450

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rpm hPa : -Pressure

: 9.20...9.30 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : 250

Rack travel in m: 10.20...10.30

2nd pressure hPa : 550 Rack travel in m: 12.50...12.90 3rd pressure hPa : 900

Rack travel in m: 14.00...14.10

START CUT-OUT

Speed 1/min: 280 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

rpm : 1200 Speed

Del.quantity cm3/: 140.0...144.0 1000 s: (138.0...146.0)

Spread cm3 : 6.50

1000 s: (7.0)

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 59.0...61.0 1000 s: (57.0...63.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00

rpm : 1280...1300 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 140.0...180.0 1000 s: (137.0...183.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm

Rack travel in mm : 5.30...5.50

Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5) Spread cm3: 3.50

1000 s: (5.50)

Remarks:

: IHC #1815503C91

In unlatched condition, do not operate greater than n = 500 1/min

Set shutoff stop 1.5...2.0 mm before

shutoff.

Only perform pump setting with original overflow valve without IH hose and restrictor 1.2 mm diameter.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : IHC 7,6 W 6 Edition : 24.04.91 : 19.10.90 Replaces Test oil : ISO-4113 : 0 403 446 240 Combination no. Injection pump Pump designation : PES6MW100/320RS1198 EP type number : 0 413 406 188 Governor Governor design. : RQV350...1200MW46-22 : 0 420 083 202 Governer no. Customer-spec. information Customer : NAVISTAR Engine : DTA-466 : 164.0 1st version kW : 2400 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 2 417 413 038 Inlet press., bar: 2.80 Test nozzle holder : 1 688 901 101 assembly **Opening** pressure, bar : 207...210 Orifice plate diameter mm : 0,6 Test lines : 1 680 750 008 Outside diameter x Wall thickness : 6.00x2.00x600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

: (3.20...3.40) Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order Phasing : 0-60-120-180-240-300 Tolerance + - ° : 0.50 (0.75) BASIC SETTING 1st speed rpm: 800 Rack travel in mm : 11.90...12.00 Del.quantity cm3/: 12.6...12.8 100 s: (12.3...13.1) Spread cm3 : 0.3100 s: (0.6) rpm : 350.02nd speed Rack travel in mm : 5.2...5.4 Del.quantity cm3/: 1.6...2.0 100 s: (1.3...2.2) cm3 : 0.3Spread 100 s: (0.5) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpiii : 1450 1st speed : 9.80...10.20 travel mm 2nd speed : 1250 rpm : 7.90...8.10 travel mm : 550 3rd speed rpm : 3.10...3.70 travel mm 350 4th speed rpm : 1.30...1.70 travel mm FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 800 Aneroid pressure h: 900 : 126.5...128.5 Del.quantity 1000 : (123.5...131.5) : 3.50 Spread cm3 1000 : (6.00) RATED SPEED 1st version Control lever position degrees: 104...112

: 3.25...3.35

Prestroke mm

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Testina:

1st rack travel in: 11.00

Speed rpm : 1285...1305

2nd rack travel in: 4.00

rpm : 1405...1415 Speed

4th rack travel in: 1550

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 70...78

Setting point w/out bumper spring

rpm : 350 Speed Rack travel in mm: 5.3

Testing:

Speed rom : 100

Minimum rack trave: 9.00

Speed rpm : 350 Rack travel in mm : 5.20...5.40

CONSTANT REGULATION

Speed rpm : 300...450

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 rom Pressure hPa : -

: 9.10...9.20 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : 275

Rack travel in m: 9.90...10.00

2nd pressure hPa : 550

Rack travel in m: 11.40...11.80 3rd pressure hPa : 900

Rack travel in m: 11.90...12.00

START CUT-OUT

Speed 1/min : 280 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

rpm : 1200 Speed

Del.quantity cm3/: 124.0...128.0

1000 s: (122.0...130.0)

cm3 : 6.50 Spread

1000 s: (7.0)

Aneroid pressure h: -

H17

Speed rpm : 500 Del.quantity cm3/ : 72.5...74.5 1000 s: (70.5...76.5)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 11.00

rpm : 1285...1305 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 140.0...180.0 1000 s: (137.0...183.0) Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350

Rack travel in mm : 5.20...5.40 Del.quantity cm3/: 16.0...20.0

1000 s: (13.5...22.5)

Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

: IHC #1815521C91

Only perform pump setting with original overflow valve without IH hose and

restrictor 1.2 mm diameter.

In unlatched condition, do not operate greater than n = 500 1/min

Set shutoff stop 1.5...2.0 mm before

shutoff.

Note remarks

Test sheet : IHC 7,6 W 1
Edition : 24.04.91
Replaces : 28.09.90
Test oil : ISO-4113

Combination no. : 0 403 446 241

Injection pump

Pump designation : PES6MW100/320RS1198

EP type number : 0 413 406 188

Governor

Governor design. : RQV350...1200MW46-23

Governer no. : 0 420 083 203

Customer—spec. information Customer : NAVISTAR

Engine : DT -466

1st version kW : 157.0 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 038

Inlet press., bar: 2.80

Test nozzle holder

assembly : 1 688 901 101

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 008

Outside diameter

x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.25...3.35

: (3.20...3.40)

Rack travel in mm : 9.00...12.00

Firing order : 1-

: 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 800

Rack travel in mm : 11.90...12.00

Del.quantity cm3/: 13.0...13.2

100 s: (12.8...13.4)

Spread cm3: 0.3

100 s: (0.6)

2nd speed rpm : 350.0 Rack travel in mm : 5.3...5.5 Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.3 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

travel mm : 9.80...10.20

2nd speed rpm : 1250

travel mm : 7.90...8.10

3rd speed rpm : 550

travel mm : 3.10...3.70 4th speed rpm : 350

4th speed rpm : 350 travel mm : 1.30...1.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 800 Aneroid pressure h: 900

Del.quantity : 130.0...132.0

1000 : (128.0...134.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 102...110

Testing:

1st rack travel in: 10.90 Speed rpm : 1270...1290 2nd rack travel in: 4.00

Speed rpm : 1405...1415 4th rack travel in: 1550

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 70...78

Setting point w/out bumper spring

: 350 rpm Rack travel in mm: 5.4

Testing:

Speed : 100 CDM

Minimum rack trave: 9.00

: 350 rpm

Rack travel in mm : 5.30...5.50

CONSTANT REGULATION

rpm : 300...450 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 rpm Pressure hPa : -

: 8.80...8.90 Rack travel mm

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : 220

Rack travel in m: 9.50...9.60
2nd pressure hPa : 500
Rack travel in m: 11.20...11.60
3rd pressure hPa : 900

Rack travel in m: 11.90...12.00

START CUT-OUT

Speed 1/min : 280 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

rpm\_ : 1200 Speed

Del.quantity cm3/: 125.0...129.0

1000 s: (123.0...131.0)

cm3 : 5.00 1000 s: (7.0) Spread

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 70.0...72.0 1000 s: (68.0...74.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.90

rpm : 1270...1290 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 130.0...170.0

1000 s: (125.0...175.0)

Rack travel in mm : 12.50...13.50

LOW IDLE

: 350 rpm

Rack travel in mm : 5.30...5.50

Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5)

: 3.50 Spread cm3

1000 s: (5.50)

Remarks:

: IHC #1815518C91

Only perform pump setting with original overflow valve without IH hose and

restrictor 1.2 mm diameter.

Set shutoff stop 1.5...2.0 mm before

shutoff.

In unlatched condition, do not operate greater than n = 500 1/min

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : IHC 7,6 W 4 Edition : 24.04.91 : 28.09.90 Replaces Test oil : ISO-4113 Combination no. : 0 403 446 242 Injection pump Pump designation : PES6MW100/320RS1198 : 0 413 406 188 EP type number Governor Governor design. : RQV350...1200MW46-24 : 0 420 083 204 Governer no. Customer-spec. information Customer : NAVISTAR Engine : DT -466 : 157.0 1st version kW Rated speed : 2400 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 2 417 413 038 Inlet press., bar: 2.80 Test nozzle holder : 1 688 901 101 assembly Opening 1 pressure, bar : 207...210 Orifice plate diameter mm : 0,6 Test lines : 1 680 750 008 Outside diameter x Wall thickness x Length mm : 6.00x2.00x600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

: 3.25...3.35 Prestroke mm : (3.20...3.40) Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order : 0-60-120-180-240-300 Phasing Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING rpm: 800 1st speed Rack travel in mm: 11.90...12.00 Del.quantity cm3/: 13.0...13.2 100 s: (12.8...13.5) Spread cm3 : 0.3100 s: (0.6) rpm : 350.0 2nd speed Rack travel in mm: 5.3...5.5 Del.quantity cm3/: 1.6...2.0 100 s: (1.3...2.2) Spread cm3 : 0.3100 s: (0.5) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1450 1st speed rpm 9.80...10.20 travel mm 2nd speed 1250 rpm travel mm : 7.90...8.10 3rd speed : 550 rpm 3.10...3.70 travel mm 350 4th speed rpm travel mm 1.30...1.70 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 800 Aneroid pressure n: 900 : 130.0...132.0 Del.quantity 1000 : (128.0...135.0) : 3.50 Spread cm3 1000 : (6.00) RATED SPEED

1st version

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Control lever

position degrees: 102...110

Testing:

1st rack travel in: 10.90

Speed rpm : 1270...1290 2nd rack travel in: 4.00

Speed rpm : 1405...1415 4th rack travel in: 1550

rpm : 0.00...1.00 Speed

LOW IDLE 1

Control lever

position degrees: 70...78

Setting point w/out bumper spring

rpm : 350 Rack travel in mm: 5.4

Testing:

rpm : 100 Speed

Minimum rack trave: 9.00 : 350 COM

Rack travel in mm : 5.30...5.50

CONSTANT REGULATION

Speed rpm : 300...450

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 man Pressure hPa : -

: 9.50...9.60 Rack travel mm

Measurement

Speed  $1/\min : 500$ 

1st pressure hPa : 215

Rack travel in m: 10.00...10.10

2nd pressure hPa : 425

Rack travel in m: 11.20...11.60

3rd pressure hPa : 900

Rack travel in m: 11.90...12.00

START CUT-OUT

1/min: 280 (290) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

: 1200 Speed rpm

Del.quantity cm3/: 125.0...129.0 1000 s: (123.0...131.0)

Spread cm3 : 5.001000 s: (7.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 83.0...85.0 1000 s: (81.0...87.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.90

rpm : 1270...1290 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 130.0...170.0

1000 s: (125.0...175.0)

Rack travel in mm : 12.50...13.50

LOW IDLE

Speed rpm : 350

Rack travel in mm : 5.30...5.50

Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5)

cm3 : 3.50Spread

1000 s: (5.50)

Remarks:

: IHC #1815515C91

Only perform pump setting with original overflow valve without IH hose and

restrictor 1.2 mm diameter.

In unlatched condition, do not operate greater than n = 500 1/min

Set shutoff stop 1.5...2.0 mm before

shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : IHC 7,6 W Test sheet : 24.04.91 Edition : 16.08.90 Replaces Test oil : ISO-4113 : 0 403 446 243 Combination no. Injection pump Pump designation : PES6MW100/320RS1198 EP type number : 0 413 406 188 Governor Governor design. : RQV350...1200MW46-25 : 0 420 083 205 Governer no. Customer-spec. information Customer : NAVISTAR : DTA-466 Engine 1st version kW : 145.0 Rated speed : 2400 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 2 417 413 038 Inlet press., bar: 2.80 Test nozzle holder : 1 688 901 101 assembly Opening : 207...210 pressure, bar Orifice plate : 0,6 diameter mm Test lines : 1 680 750 008 Outside diameter x Wall thickness : 6.00x2.00x600 x Length mm (A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values \_\_\_\_

Test pressure, bar: 30...32

BEGINNING OF DELIVERY

: 3.25...3.35 : (3.20...3.40) Prestroke mm Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Firing order Phasing : 0-60-120-180-240-300 Tolerance + - ° : 0.50 (0.75) BASIC SETTING 1st speed rpm: 800 Rack travel in mm : 11.40...11.50 Del.guantity cm3/: 12.0...12.2 100 s: (11.8...12.4) Spread cm3 : 0.3100 s: (0.6) rpm : 350.02nd speed Rack travel in mm : 5.3...5.5 Del.quantity cm3/ : 1.6...2.0 100 s: (1.3...2.2) cm3 : 0.3 Spread 100 s: (0.5) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 1450 : 9.80...10.20 travel mm 2nd speed : 1250 rpm travel mm : 7.90...8.10 : 550 3rd speed rpm : 3.10...3.70 travel mm : 350 4th speed man : 1.30...1.70 travel mm FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 800 Aneroid pressure h: 900 Del.quantity : 120.0...122.0 1000 : (118.0...124.0) : 3.50 cm3 Spread 1000 : (6.00) RATED SPEED 1st version

Control lever

position degrees: 98...106

Testing:

1st rack travel in: 10.50

rpm : 1265...1285

2nd rack travel in: 4.00

Speed rpm : 1385...1395

4th rack travel in: 1550

rpm : 0.00...1.00 Speed

LOW IDLE 1

Control lever

position degrees: 66...74

Setting point w/out bumper spring

rpm : 350

Rack travel in mm: 5.4

Testing:

Speed : 100 rpm

Minimum rack trave: 9.00

: 350 Speed rom

Rack travel in mm : 5.30...5.50

CONSTANT REGULATION

rpm : 300...450 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 800

Pressure hPa : 210

: 9.40...9.50 Rack travel mm

Measurement

Speed 1/min: 800

1st pressure hPa : -

Rack travel in m: 8.50...8.60

2nd pressure hPa : 460

Rack travel in m: 10.70...11.00

3rd pressure hPa : 900

Rack travel in m: 11.40...11.50

START CUT-OUT

1/min: 280 (290) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

: 1200 Speed rpm

Del.quantity cm3/: 115.0...119.0 1000 s: (113.0...121.0)

Spread cm3 : 6.50

1000 s: (7.0)

Aneroid pressure h: -

**H23** 

rpm : 800

Del.quantity cm3/: 71.5...73.5 1000 s: (69.5...75.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.50

rpm : 1265...1285

STARTING FUEL DELIVERY

Speed rpm

Del.quantity cm3/: 130.0...170.0

1000 s: (127.0...173.0)

Rack travel in mm : 12.50...13.50

LOW IDLE

Speed rpm : 350 Rack travel in mm : 5.30...5.50

Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5) Spread cm3: 3.50 1000 s: (5.50)

Remarks:

: IHC #1815519091

Set shutoff stop 1.5...2.0 mm before

shutoff.

Only perform pump setting with original overflow valve without IH hose and

restrictor 1.2 mm diameter.

In unlatched condition, do not operate greater than n = 500 1/min

Note remarks

: IHC 7,6 X 2 Test sheet Edition : 24.04.91 : 28.09.90 Replaces Test oil : ISO-4113

Combination no. : 0 403 446 244

Injection pump

Pump designation : PES6MW100/320RS1189

: 0 413 406 177 EP type number

Governor

: RQV350...1200MW46-26 : 0 420 083 206 Governor design.

Governer no.

Customer-spec. information Customer : NAVISTAR

Engine : DTA-466

1st version kW : 201.0 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 038

Inlet press., bar: 2.80

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.25...3.35 Prestroke mm : (3.20...3.40) Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 800

Rack travel in mm : 14.70...14.80

Del.quantity cm3/: 16.5...16.7

100 s: (16.3...16.9)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 350.02nd speed

Rack travel in mm: 5.2...5.4 Del.quantity cm3/: 1.6...2.0

100 s: (1.3...2.2)

cm3 : 0.3Spread

100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL rpm : 1450 1st speed

: 9.80...10.20 travel mm

rpm : 1250 2nd speed

: 7.90...8.10 travel mm

rpm : 550 3rd speed

travel mm : 3.10...3.70

4th speed : 350 rpm

: 1.30...1.70 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 800

Aneroid pressure h: 1200

: 165.0...167.0 Del.quantity

1000 : (163.0...169.0)

: 3.50 Spread cm3 1000 : (6.00)

RATED SPEED

1st version

Control Lever position degrees: 102...110 Testina: 1st rack travel in: 13.10 rpm : 1270...1290 Speed 2nd rack travel in: 4.00 Speed rpm : 1430...1440 4th rack travel in: 1550 Speed rpm : 0.00...1.00 LOW IDLE 1 Control lever position degrees: 66...74 Setting point w/out bumper spring Speed rpm : 350 Rack travel in mm : 5.3 Testina: Speed : 100 CDM Minimum rack trave: 9.00 Speed rpm: 350 Rack travel in mm: 5.20...5.40 CONSTANT REGULATION rpm : 300...450 Speed TORQUE CONTROL Dimension a mm : 0.70 Torque control curve - 1st version 1st speed rpm : 800 Rack travel in m: 14.70...14.80 2nd speed rpm : 1200 Rack travel in m: 14.00...14.10 3rd speed rpm : 1050 Rack travel in m: 14.30...14.50 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm hPa : Pressure Rack travel mm : 9.20...9.30 Measurement 1/min: 500 Speed 1st pressure hPa : 275 Rack travel in m: 10.60...10.70 2nd pressure hPa : 585 Rack travel in m: 13.00...13.40 3rd pressure hPa : 1200 Rack travel in m: 14.70...14.80 START CUT-OUT

1/min: 280 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm : 1200
Del.quantity cm3/ : 144.5...148.5
1000 s: (142.5...150.5)
Spread cm3 : 6.50

1000 s: (7.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 65.0...67.0 1000 s: (63.0...69.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.10

rom : 1270...1290 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 150.0...190.0 1000 s: (147.0...193.0) Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.20...5.40
Del.quantity cm3/: 16.0...20.0
1000 s: (13.5...22.5)

cm3 : 3.50

Spread 1000 s: (5.50)

Remarks:

: IHC #1815520C91

In unlatched condition, do not operate greater than n = 500 1/min

Set shutoff stop 1.5...2.0 mm before shutoff.

Only perform pump setting with original overflow valve without IH hose and restrictor 1.2 mm diameter.

H25

Speed

Note remarks

: IHC 7,7 A : 24.04.91 Test sheet Edition Replaces : 17.10.90 Test oil : ISO-4113

Combination no. : 0 403 446 245

Injection pump

Pump designation : PES6MW100/320RS1204

EP type number : 0 413 406 192

Governor

Governor design. : RQV350...1350MW46-27

: 0 420 083 207 Governer no.

Customer-spec. information Customer : NAVISTAR

Engine : DTA-360

: 138.0 1st version kW Rated speed : 2700

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 038

Inlet press., bar: 2.80

Test nozzle holder

assembly : 1 688 901 101

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.25...3.35 : (3.20...3.40) Prestroke mm

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no.

BASIC SETTING

1st speed rpm: 850

Rack travel in mm : 10.60...10.70

Del.quantity cm3/: 10.9...11.1

100 s: (10.7...11.3)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0 Rack travel in mm : 5.2...5.4 Del.quantity cm3/: 1.6...2.0

100 s: (1.3...2.2)

cm3 : 0.3 Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 14501st speed

travel mm : 8.20...8.60

2nd speed 1350 rom

travel mm 7.40...7.60

3rd speed 500 rpm

2.50...3.10 travel mm

4th speed 350 rpm

travel mm 1.30...1.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850 Aneroid pressure h: 900

Del.quantity 1000 : 109.5...111.5 : (107.5...113.5)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever position degrees: 104...112 Testing: 1st rack travel in: 9.60 rpm : 1415...1435 Speed 2nd rack travel in: 4.00 rpm : 1510...1520 Speed 4th rack travel in: 1600 rom : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 72...80 Setting point w/out bumper spring : 350 MON Rack travel in mm: 5.3 Testing: Speed rpm : 100 Minimum rack trave: 9.00 : 350 Speed rom Rack travel in mm : 5.20...5.40 CONSTANT REGULATION rpm : 300...450 Speed Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 mcg s hPa : -Pressure Rack travel mm : 8.40...8.50 Measurement Speed 1/min: 500 1st pressure hPa : 210 Rack travel in m: 8.90...9.00 2nd pressure hPa : 410 Rack travel in m: 10.00...10.40 3rd pressure hPa : 900 Rack travel in m: 10.60...10.70 START CUT-OUT 1/min: 280 (290) Speed FUEL DELIVERY CHARACTERISTICS

cm3 : 5.00Spread 1000 s: (7.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 64.0...66.0 1000 s: (62.0...68.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 9.60 Speed rpm : 1415...1435 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 130.0...170.0 1000 s: (127.0...173.0) Rack travel in mm : 13.00...14.00 LOW IDLE Speed rpm : 350 Rack travel in mm : 5.20...5.40 Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5) : 3.50 Spread cm31000 s: (5.50) Remarks: : IHC #1815516C91 Only perform pump setting with original overflow valve without IH hose and restrictor 1.2 mm diameter.

In unlatched condition, do not operate greater than n = 500 1/min

Set shutoff stop 1.5...2.0 mm before shutoff.

Speed

1st version

Aneroid pressure h: 900

mqn.

: 1350

Del.quantity cm3/: 105.0...109.0 1000 s: (103.0...111.0)

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : PER 10,0 S Edition : 24.04.91 Replaces Test oil : ISO-4113 : 0 403 446 250 Combination no. Injection pump Pump designation : PES6MW100/320RS1194 : 0 413 406 186 EP type number Governor : RQV300...1300MW108K Governor design. : 0 420 083 998 Governer no. Customer-spec. information Customer : PERKINS Engine : 180 TI : 134.0 1st version kW Rated speed : 2600 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 047 Inlet press., bar: 1.50 Test nozzle holder assembly : 1 688 901 101 Opening : 207...210 pressure, bar Orifice plate diameter mm : 0,6 Test lines : 1 680 750 008 Outside diameter x Wall thickness : 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: (3.25...3.45) Rack travel in mm : 12.00...14.00 Firing order : 1-5-3-6-2-4 Phasina : 0-60-120-180-240-300 Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING rpm: 1300 1st speed Rack travel in mm : 14.30...14.40 Del.quantity cm3/: 13.4...13.6 100 s: (13.2...13.8) cm3 : 0.3Spread 100 s: (0.6) 2nd speed rpm : 300.0Rack travel in mm: 6.1...6.3 Del.quantity cm3/: 1.4...1.8 100 s: (1.1...2.0) cm3 : 0.3 Spread 100 s: (0.5) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 1350 1st speed : 10.00...10.40 travel mm 2nd speed rpm : 900 : 6.40...6.60 travel mm 3rd speed : 480 rpm : 3.10...3.70 travel mm : 300 4th speed rpm : 1.40...1.80 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1380 Speed Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1300Speed Aneroid pressure h: 900 Del.quantity : 134.0....38.0)

: 3.30...3.40

Prestroke mm

cm3 : 3.50Rack travel in m: 10.40...10.50 Spread 1000 : (6.00) 2nd pressure hPa : 220 Rack travel in m: 10.90...11.20 3rd pressure hPa : 900 RATED SPEED Rack travel in m: 11.70...11.90 1st version Control lever START CUT-OUT position degrees: 118...126 Speed 1/min: 220 (240) Testing: 1st rack travel in: 13.30 FUEL DELIVERY CHARACTERISTICS rpm : 1340...1350 Speed 2nd rack travel in: 4.00 Speed rpm : 1480...1510 4th rack travel in: 1600 Speed rpm : 0.00...1.00 1st version Aneroid pressure h: 900 Speed rpm : 800
Del.quantity cm3/: 126.0...129.0
1000 s: (123.5...131.5) LOW IDLE 1 Control lever Spread cm3 : 5.00position degrees: 70...78 1000 s: (7.0) Setting point w/out bumper spring Aneroid pressure h: 900 Speed rpm : 500 Del.quantity cm3/: 107.5...110.5 1000 s: (105.0...113.0) Speed rpm : 300 Rack travel in mm : 6.2 Testing: Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 77.0...79.0 Speed rpm : 200 Minimum rack trave: 7.50 Speed rpm : 300 Rack travel in mm : 6.10...6.30 1000 s: (75.0...81.0) CONSTANT REGULATION BREAKAWAY Speed nom : 330...500 1st version TORQUE CONTROL 1mm rack travel less than Torque control curve - 1st version 1st speed rpm : 1300 full load rack tr: 13.30 Rack travel in m: 14.30...14.40 rpm : 1340...1350 Speed rpm : 800 2nd speed Rack travel in m: 13.10...13.30 STARTING FUEL DELIVERY 3rd speed rpm : 500 Rack travel in m: 11.70...11.90 4th speed rpm : 1000 rpm : 100 Speed Del.quantity cm3/: 90.0...100.0 1000 s: (87.0...103.0) Rack travel in mm: 19.00...21.00 Rack travel in m: 13.60...13.90 5th speed rpm : 700 Rack travel in m: 12.60...12.90 Aneroid/Altitude LOW IDLE Compensator Test 1st version Setting : 500 Speed rpm hPa : Pressure : 9.90,...10.00 Rack travel mm Remarks: Measurement Speed  $1/\min : 500$ Start-of-delivery blocking 46.5° 1st pressure hPa : 180 before start of delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : IHC 7,6 X 1 : 24.04.91 : 28.09.90 Test sheet Edition Replaces Test oil : ISO-4113 Combination no. : 0 403 446 255 Injection pump Pump designation : PES6MW100/320RS1189 EP type number : 0 413 406 177 Governor Governor design. : RQV350...1200MW46-30 : 0 420 083 218 Governer no. Customer-spec. information Customer : NAVISTAR : DTA-466 Engine 1st version kW : 201.0 : 2400 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 2 417 413 038 Inlet press., bar: 2.80 Test nozzle holder assembly : 1 688 901 101 Opening pressure, bar : 207...210 Orifice plate diameter mm : 0,6 : 1 680 750 008 Test lines Outside diameter x Wall thickness : 6.00X2.00X600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

Prestroke mm : 3.25...3.35 : (3.20...3.40) Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180-240-300 Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 800 Rack travel in mm: 14.50...14.60 Del.quantity cm3/: 16.1...16.3 100 s: (15.9...16.5) Spread cm3 : 0.3100 s: (0.6) rpm : 350.0 2nd speed Rack travel in mm : 5.2...5.4 Del.quantity cm3/ : 1.6...2.0 100 s: (1.3...2.2) cm3 : 0.3Spread 100 s: (0.5) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 1450 : 9.80...10.20 travel mm rpm : 1250 2nd speed : 7.90...8.10 travel mm rpm : 550 3rd speed : 3.10...3.70 : 350 travel mm 4th speed rpm travel mm : 1.30...1.70 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 800 Speed Aneroid pressure h: 1200 Del.quantity : 101.0...165.0) : 3.50 Spread cm3 1000 : (6.00) RATED SPEED 1st version

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Control lever

position degrees: 102...110

Testing:

1st rack travel in: 13.10

Speed rpm: 1270...1290 2nd rack travel in: 4.00

Speed rpm : 1430...1440 4th rack travel in: 1550

rom : 0.00...1.00Sceed

LOW IDLE 1

Control lever

position degrees: 66...74

Setting point w/out bumper spring

rpm : 350

Rack travel in mm: 5.3

Testing:

Speed rpm : 100

Minimum rack trave: 9.00

Speed rpm : 350 Rack travel in mm : 5.20...5.40

CONSTANT REGULATION

rom : 300...450 Speed

TORQUE CONTROL

Dimension a mm : 0.40

Torque control curve - 1st version

1st speed rpm : 800

Rack travel in m: 14.50...14.60 and speed rpm : 1200 Rack travel in m: 14.10...14.20

2nd speed

3rd speed rpm : 1050

Rack travel in m: 14.30...14.50

Aneroid/Altitude

Compensator Test

1st version

Setting

: 500 Speed rom

hPa : Pressure

Rack travel mm : 10.20...10.30

Measurement

1/min: 500 Speed

1st pressure hPa : 260

Rack travel in m: 11.00...11.10

2nd pressure hPa : 650

Rack travel in m: 13.20...13.50 3rd pressure hPa : 1200 Rack travel in m: 14.50...14.60

START CUT-OUT

1/min: 280 (290) Speed

104

## FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 Speed rpm : 1200 Del.quantity cm3/ : 146.0...150.0 1000 s: (144.0...152.0)

cm3 : 6.50

1000 s: (7.0)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 82.0...84.0 1000 s: (80.0...86.0)

BREAKAWAY

Spread

1st version

1mm rack travel less than

full load rack tr: 13.10

rpm : 1270...1290 Speed

STARTING FUEL DELIVERY

LOW IDLE

Speed : 350 rpm

Rack travel in mm : 5.20...5.40

Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5)

cm3 : 3.50Spread

1000 s: (5.50)

Remarks:

: IHC #1816731C91

In unlatched condition, do not operate greater than n = 500 1/min

Set shutoff stop 1.5...2.0 mm before

shutoff.

Only perform pump setting with original

overflow valve without IH hose and restrictor 1.2 mm diameter.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : IHC 7,6 W 7 Edition : 24.04.91 Replaces Test oil : ISO-4113 Combination no. : 0 403 446 256 Injection pump Pump designation : PES6MW100/320RS1198 EP type number : 0 413 406 188 Governor Governor design.: RQV350...1200MH46-38 : 0 420 083 219 Governer no. Customer-spec. information Customer : NAVISTAR : DTA-466 Engine 1st version kW : 164.0 Rated speed : 2400 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 2 417 413 038 Inlet press., bar: 2.80 Test nozzle holder : 1 688 901 101 assembly Openina | pressure, bar : 207...210 Orifice plate diameter mm : 0,6 Test lines : 1 680 750 008 Outside diameter x Wall thickness x Length mm : 6.00X2.00X600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

: 3.25...3.35 : (3.20...3.40) Prestroke mm Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order : 0-60-120-180-240-300 Phasing Tolerance + - ° : 0.50 (0.75) BASIC SETTING 1st speed rpm: 800 Rack travel in mm : 11.90...12.00 Del.guantity cm3/: 12.7...12.9 100 s: (12.5...13.1) Spread cm3 : 0.3100 s: (0.6) 2nd speed rpm : 350.0 Rack travel in mm : 5.2...5.4 Del.quantity cm3/: 1.6...2.0 100 s: (1.3...2.2) cm3 : 0.3Spread 100 s: (0.5) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 1450 1st speed 9.80...10.20 travel mm rpm : 1250 2nd speed : 7.90...8.10 : 550 travel mm 3rd speed rpm : 3.10...3.70 travel mm : 350 4th speed rpm travel mm : 1.30...1.70 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 800 Speed Aneroid pressure h: 900 : 127.5...129.5 Del.quantity 1000 : (125.5...131.5) : 3.50 Spread cm3 1000 : (6.00) RATED SPEED 1st version Control lever

position degrees: 104...112

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Testing:

1st rack travel in: 11.00

Speed rpm : 1285...1305

2nd rack travel in: 4.00

rpm : 1405...1415 Speed

4th rack travel in: 1550

Speed rom : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 70...78

Setting point w/out bumper spring

rpm : 350 Rack travel in mm: 5.3

Testing:

rpm : 100 Speed

Minimum rack trave: 9.00

rpm : 350 Speed

Rack travel in mm : 5.20...5.40

CONSTANT REGULATION

rpm : 300...450 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rom : 500

Pressure hPa : -

: 9.60...9.70 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : 235 Rack travel in m: 10.10...10.20

2nd pressure hPa : 485

Rack travel in m: 11.10...11.50

3rd pressure hPa : 900

Rack travel in m: 11.90...12.00

START CUT-OUT

1/min: 280 (290) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

rpm : 1200 Speed

Del.quantity cm3/: 125.0...129.0

1000 s: (123.0...131.0)

Spread cm3 : 6.50

1000 s: (7.0)

Aneroid pressure h: -

J06

Speed rpm : 500 Del.quantity cm3/ : 81.5...83.5 1000 s: (79.5...83.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.00

Speed rpm : 1285...1305

STARTING FUEL DELIVERY

Speed : 100 rom

Del.quantity cm3/: 140.0...180.0 1000 s: (137.0...183.0) Rack travel in mm: 20.00...21.00

LOW IDLE

Remarks:

: IHC #1816729C91

Only perform pump setting with original overflow valve without IH hose and

restrictor 1.2 mm diameter.

In unlatched condition, do not operate greater than n = 500 1/min

Set shutoff stop 1.5...2.0 mm before

shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : IHC 7,6 W 2 Edition : 24.04.91 : 17.09.90 Replaces Test oil : ISO-4113 Combination no. : 0 403 446 262 Injection pump EP type number : 0 413 406 188 Governor : 0 420 083 226 Governer no. Customer-spec. information Customer : NAVISTAR Engine : DTA-466 1st version kW : 172.0 Rated speed : 2400 TEST BENCH REQUIREMENTS Test oil : 38...42 inlet temp. °C Overflow valve : 2 417 413 038 Inlet press., bar: 2.80 Test nozzle holder : 1 688 901 101 assembly Opening . : 207...210 pressure, bar Orifice plate diameter mm : 0,6 Test lines : 1 680 750 008

Pump designation : PES6MW100/320RS1198 Governor design. : RQV350...1200MW46-33 Outside diameter x Wall thickness x Length mm : 6.00X2.00X600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY Test pressure, bar: 30...32

: 3.25...3.35 : (3.20...3.40) Prestroke mm Rack travel in mm : 9.00...12.00 Firing order : 1-5- 3- 6- 2- 4 : 0-60-120-180-240-300 Phasing Tolerance + - ° : 0.50 (0.75) BASIC SETTING 1st speed rpm: 800 Rack travel in mm : 12.10...12.20 Del.quantity cm3/: 13.1...13.3 100 s: (12.9...13.5) cm3 : 0.3Spread 100 s: (0.6) 2nd speed rpm : 350.0Rack travel in mm : 5.2...5.4 Del.quantity cm3/: 1.6...2.0 100 s: (1.3...2.2) cm3 : 0.3 Spread 100 s: (0.5) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL \_rpm : 1450 1st speed : 9.80...10.20 travel mm : 1250 2nd speed rpm travel mm : 7.80...8.10 3rd speed : 550 rpm : 3.10...3.70 travel mm : 350 4th speed rpm : 1.30...1.70 travel mm FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 800 Aneroid pressure h: 900 Del.quantity : 731.0....35.0) : 3.50 1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 98...106

Testing:

1st rack travel in: 11.10

rpm : 1270...1290 Speed

2nd rack travel in: 4.00

rpm : 1405...1415 Speed

4th rack travel in: 1500

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 66...74

Setting point w/out bumper spring

: 350 rpm Rack travel in mm : 5.3

Testina:

Speed rom : 100

Minimum rack trave: 9.00

rpm : 350 Speed

Rack travel in mm : 5.20...5.40

CONSTANT REGULATION

rpm : 300...450 Speed

Aneroid/Altitude Compensator Test

1st version Setting

Speed : 500 rpm

hPa : -Pressure

Rack travel mm : 9.10...9.20

Measurement

Speed 1/min: 500

1st pressure hPa : 200

Rack travel in m: 9.70...9.80

2nd pressure hPa : 575

Rack travel in m: 11.40...11.80

3rd pressure hPa : 900

Rack travel in m: 12.10...12.20

START CUT-OUT

Speed 1/min : 280 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

: 1200 rpm

Del.quantity cm3/: 128.5...132.5 1000 s: (126.5...134.5)

cm3 : 6.50Spread

1000 s: (7.0)

Aneroid pressure h: -

108

Speed rpm : 500 Del.quantity cm3/ : 72.0...74.0 1000 s: (70.0...76.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 11.10

rpm : 1270...1290 Speed

STARTING FUEL DELIVERY

Speed rpm

Del.quantity cm3/: 130.0...170.0

1000 s: (127.0...173.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.20...5.40
Del.quantity cm3/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

: IHC #1817194C91

Only perform pump setting with original overflow valve without IH hose and restrictor 1.2 mm diameter.

In unlatched condition, do not operate greater than n = 500 1/min

Set shutoff stop 1.5...2.0 mm before

shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : IHC 7,6 W 3 : 24.04.91 Test sheet Edition : 17.09.90 Replaces : ISO-4113 Test oil : 0 403 446 263 Combination no. Injection pump Pump designation : PES6MW100/320RS1198 EP type number : 0 413 406 188 Governor Governor design. : RQV350...1200MW46-34 Governer no. : 0 420 083 227 Customer-spec. information : NAVISTAR Customer : DTA-466 Engine : 172.0 1st version kW Rated speed : 2400 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 2 417 413 038 Inlet press., bar: 2.80 Test nozzle holder : 1 688 901 101 assembly Opening : 207...210 pressure, bar Orifice plate diameter mm : 0,6 Test lines : 1 680 750 008 Outside diameter x Wall thickness : 6.00x2.00x600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

Prestroke mm : 3.25...3.35 : (3.20...3.40) Rack travel in mm : 9.00...12.00 Firing order : 1-5- 3- 6- 2- 4 Phasing : 0-60-120-180-240-300 Tolerance + - ° : 0.50 (0.75) BASIC SETTING 1st speed rpm: 800 Rack travel in mm : 12.10...12.20 Del.quantity cm3/: 13.1...13.3 100 s: (12.9...13.5) Spread cm3 : 0.3100 s: (0.6) rpm : 350.02nd speed Rack travel in mm : 5.2...5.4 Del.quantity cm3/: 1.6...2.0 100 s: (1.3...2.2) cm3 : 0.3Spread 100 s: (0.5) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 1450 1st speed : 9.80...10.20 travel mm rpm : 1250 2nd speed travel mm : 7.90...8.10 3rd speed rpm : 550 : 3.10...3.70 rpm : 350\_ travel mm 4th speed travel mm : 1.30...1.70 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 800 Aneroid pressure h: 900 : 131.0...133.0 Del.quantity 1000 : (129.0...135.0) : 3.50 Spread cm3 1000 : (6.00) RATED SPEED 1st version Control lever

position degrees: 98...106

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Testing:

1st rack travel in: 11.10

rpm : 1270...1290 Speed

2nd rack travel in: 4.00

Speed rpm : 1405...1415 4th rack travel in: 1500

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 66...74

Setting point w/out bumper spring

rom : 350 Rack travel in mm: 5.3

Testing:

Speed rpm : 100

Minimum rack trave: 9.00

: 350 Speed rpm

Rack travel in mm : 5.20...5.40

CONSTANT REGULATION

rpm : 300...450 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rpm

Pressure hPa : ~

Rack travel mm : 9.10...9.20

Measurement

1/min: 500 Speed

1st pressure hPa : 250 Rack travel in m: 10.00...10.10 2nd pressure hPa : 575 Rack travel in m: 11.20...11.60

3rd pressure hPa : 900

Rack travel in m: 12.10...12.20

START CUT-OUT

Speed 1/min : 280 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm : 1200 Del.quantity cm3/ : 128.5...132.5

1000 s: (126.5...134.5)

cm3 : 6.50Spread

1000 s: (7.0)

Aneroid pressure h: -

J10

Speed rpm : 500 Del.quantity cm3/ : 74.5...76.5 1000 s: (72.5...78.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.10

rpm : 1270...1290 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 130.0...170.0 1000 s: (127.0...173.0) Rack travel in mm: 20.00...21.00

LOW IDLE

Speed rpm : 350

Rack travel in mm : 5.20...5.40 Del.quantity cm3/: 16.0...20.0

1000 s: (13.5...22.5)

cm3 : 3.50 Spread

1000 s: (5.50)

Remarks:

: IHC #1817193C91

Only perform pump setting with original overflow valve without IH hose and restrictor 1.2 mm diameter.

In unlatched condition, do not operate greater than n = 500 1/min

Set shutoff stop 1.5...2.0 mm before

shutoff.

Note remarks

: MB 6.1 E : 03.05.91 Test sheet Edition

Replaces

Test oil

: ISO-4113

Combination no. : 0 403 446 275

Injection pump

Pump designation : PES6MW100/720RS1120

EP type number : 0 413 406 112

Governor

Governor design. : RQV300...1300MW50-12

Governer no. : 0 420 083 237

Customer-spec. information Customer : MB-NFZ

Engine : 0M366LA

1st version kW : 156.0 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening.

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.50...3.60 : (3.45...3.65) Prestroke mm

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 13.90...14.00

Del.quantity cm3/: 10.8...11.0

100 s: (10.6...11.2)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 300.02nd speed Rack travel in mm : 6.4...6.6 Del.quantity cm3/: 0.9...1.3

100 s: (0.6...1.5)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

: 9.40...10.00 travel mm

2nd speed rpm : 1350

travel mm : 8.50...8.70

3rd speed : 450 rpm

travel mm : 2.40...3.00

: 300 4th speed rpm

travel mm : 1.20...1.60

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1340 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300 Aneroid pressure h: 1000

Aneroid F. Del.quantity 10<u>0</u>0 : 108.0...110.0 : (106.0...112.0) : 3.50

cm3

1000 : (6.00)

RATED SPEED

Spread

1st version
Control lever
position degrees: 110...118

Testing:
1st rack travel in: 12.90
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1460...1490

4th rack travel in: 1530 Speed rpm: 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 74...82
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.5

Testing:
Speed rpm : 100
Minimum rack trave: 8.00
Speed rpm : 300

Rack travel in mm : 6.40...6.60

CONSTANT REGULATION

Speed rpm : 320...550

Aneroid/Altitude
Compensator Test

1st version Setting Speed rpm : 500 Pressure hPa : -

Rack travel mm : 10.30...10.40

Measurement Speed 1/min:500

1st pressure hPa : 450 Rack travel in m: 11.10...11.30 2nd pressure hPa : 600 Rack travel in m: 12.50...12.70

3rd pressure hPa : 1000 Rack travel in m: 13.90...14.00

START CUT-OUT

Speed 1/min: 230 (250)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 750
Del.quantity cm3/ : 98.0...102.0
1000 s: (96.0...104.0)

Spread cm3 : 5.00 1000 s: (7.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 36.0...38.0 1000 s: (34.0...40.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 12.90 Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 90.0...100.0 1000 s: (87.0...103.0)

LOW IDLE

Speed rpm : 300 Rack travel in mm : 6.40...6.60 Del.quantity cm3/ : 9.0...13.0 1000 s: (6.5...15.5)

Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

Note remarks

Test sheet : MB 6,1 D 2 Edition : 26.04.91 Replaces : 18.02.91

Test oil : ISO-4113

Combination no. : 0 403 446 276

Injection pump

Pump designation : PES6MW100/720RS1131

EP type number : 0 413 406 123

Governor

Governor design. : RQV300...1200MW50-18

Governer no. : 0 420 083 243

Customer spec. information Customer : MB-NFZ

Engine : OM 366 A

1st version kW : 115.0 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

**Opening** 

pressure, bar : 172...175

Test lines : 1 680 715 015

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80

: (3.65...3.75)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - \circ : 0.50 (0.75)$ 

BASIC SETTING

1st speed rpm: 1200

Rack travel in mm : 10.20...10.30

Del.guantity cm3/: 8.4...8.6

100 s: (8.2...8.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0 Rack travel in mm : 5.6...5.8 Del.quantity cm3/: 1.0...1.4

100 s: (0.7...1.6)

Spread cm3 : 0.3 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1250 travel mm : 7.40...7.80

2nd speed rpm : 880 travel mm : 4.90...5.10

3rd speed rpm : 500 travel mm : 2.70...3.10

4th speed rpm: 300

travel mm : 1.20...1.60

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 1250

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200 Aneroid pressure h: 700

Del.quantity : 84.0...86.0

1000 : (82.0...88.0) Spread cm3 : 3.50

read cm3 : 3.50 1000 : (6.00)

RATED SPEED

1st version Control lever position degrees: 107...115 Testing: 1st rack travel in: 9.20 Speed rpm : 1240...1250 2nd rack travel in: 4.00 Speed rpm : 1335...1365 4th rack travel in: 1450 Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 73...81 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 5.7 Testing: Speed rpm : 200 Minimum rack trave: 7.50 rpm : 300 Speed Rack travel in mm : 5.60...5.80 Rack travel in mm : 2.00 rpm : 410...470 Speed TORQUE CONTROL Dimension a mm : 0.80 Torque control curve - 1st version rpm : 1200 1st speed Rack travel in m: 10.20...10.30 2nd speed rpm : 600 Rack travel in m: 10.90...11.00 3rd speed rpm : 1100 Rack travel in m: 10.30...10.60 Aneroid/Altitude Compensator Test 1st version Setting 7pm : 500 hPa : 200 Speed rpm Pressure : 8.90...9.00 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 8.60...8.70 2nd pressure hPa : 350 Rack travel in m: 10.20...10.50 3rd pressure hPa : 700 Rack travel in m: 10.90...11.00 START CUT-OUT 1/min : 200 (230) Speed

FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 Speed rpm : 600 Del.quantity cm3/ : 78.0...81.0 1000 s: (75.5...83.5) Spread cm3 : 5.001000 s: (7.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 44.0...46.0 1000 s: (42.0...48.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 9.20 rpm : 1240...1250 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 78.0...88.0 1000 s: (75.0...91.0) LOW IDLE rpm : 300 Speed Rack travel in mm : 5.60...5.80 Del.quantity cm3/: 10.0...14.0 1000 s: (7.5...16.5) Spread cm3: 3.50 1000 s: (5.50) Remarks:

1

Note remarks

: MB 6,1 D 4 : 26.04.91 Test sheet Edition : 19.03.91 Replaces Test oil : ISO-4113

Combination no. : 0 403 446 278

Injection pump

Pump designation : PES6MW100/720RS1131

EP type number : 0 413 406 123

Governor

Governor design. : RQV300...1300MW50-17

: 0 420 083 244 Governer no.

Customer-spec. information Customer : MB-NFZ

Engine : OM 366 LA

: 150.0 1st version kW Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

**Opening** 

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80 : (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1300

Rack travel in mm : 12.20...12.30

Del.quantity cm3/: 9.6...9.8

100 s: (9.4...10.0)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 300.02nd speed Rack travel in mm: 6.1...6.3 Del.quantity cm3/: 0.9...1.3 100 s: (0.7...1.5)

cm3 : 0.3Spread

100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1500 1st speed

: 9.80...10.20 travel mm

rpm : 1350 2nd speed

: 8.40...8.60 travel mm

3rd speed rpm : 670

: 4.60...5.20 travel mm

4th speed rpm : 300

: 1.10...1.50 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 1370

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1300 Speed Aneroid pressure h: 700

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version Control lever position degrees: 107...115 Testing: 1st rack travel in: 11.20 rpm : 1340...1350 Speed 2nd rack travel in: 4.00 Speed rpm : 1460...1490 4th rack travel in: 1550 rom : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 55...63 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 6.2 Testing: rpm : 100 Speed Minimum rack trave: 7.60 : 300 rom Rack travel in mm : 6.10...6.30 CONSTANT REGULATION Speed rom : 350...550 Aneroid/Altitude Compensator Test 1st version Settina : 500 Speed rom hPa : -Pressure Rack travel mm : 10.20...10.30 Measurement Speed 1/min : 500 1st pressure hPa : 170 Rack travel in m: 10.90...11.00 2nd pressure hPa : 225 Rack travel in m: 11.90...12.20 3rd pressure hPa : 700 Rack travel in m: 12.20...12.30 START CUT-OUT Speed 1/min: 220 (250) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 Speed rpm : 575
Del.quantity cm3/: 82.0...85.0

1000 s: (79.5...87.5)

Spread cm3 : 5.001000 s: (7.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 50.5...52.5 1000 s: (48.5...54.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.20

Speed rpm : 1340...1350

STARTING FUEL DELIVERY

rpm : 100 Speed Del.quantity cm3/: 90.0...100.0 1000 s: (87.0...103.0)

LOW IDLE Speed rpm : 300 Rack travel in mm : 6.10...6.30

Del.quantity cm3/: 9.0...13.0 1000 s: (7.0...15.0) cm3 : 3.50 1000 s: (5.50)

Spread

Remarks:

Note remarks

: MB 6,1 B 4 : 24.04.91 Test sheet Edition : 22.03.91 Replaces

Test oil : ISO-4113

Combination no. : 0 403 446 280

Injection pump

Pump designation : PES6MW100/720RS1131-

: 0 413 406 165 EP type number

Governor

Governor design. : RQV300...1300MW50-19

Governer no. : 0 420 083 245

Customer-spec. information Customer : MB-NFZ

Engine : 0M366LA

1st version kW : 155.0 : 2600 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.60...3.70 Prestroke mm

: (3.55...3.75)

(B) Setting of injection pump with governor

Rack travel in mm : 9.00...12.00

rpm: 1300

100 s: (9.6...10.2)

Rack travel in mm : 13.10...13.20

cm3 : 0.3

100 s: (0.6)

rpm : 300.0

cm3 : 0.3

100 s: (0.5)

Del.quantity cm3/: 9.8...10.0

Rack travel in mm: 6.4...6.6

Del.quantity cm3/: 1.0...1.4 100 s: (0.7...1.6)

Firing order

Tolerance + - °

BASIC SETTING

1st speed

Spread

Spread

2nd speed

Phasing

: 1-5-3-6-2-4

: 0-60-120-180-240-300

: 0.50 (0.75)

GUIDE SLEEVE TRAVEL 1st speed rpm : 1450

9.50...9.90 travel mm

rpm : 1350 2nd speed

: 8.40...8.60 travel mm

rpm : 600 3rd speed travel mm : 3.90...4.50

: 300 4th speed rpm

: 0.80...1.20 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 1350 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300Aneroid pressure h: 1000

: 98.0...100.0 Del.quantity 1000 : (96.0...102.0)

: 3.50 cm3

Spread 1000 : (6.00)

RATED SPEED

1st version Control Lever position degrees: 114...122 Testina: 1st rack travel in: 12.10 rpm : 1345...1355 Speed 2nd rack travel in: 4.00 Speed rpm : 1460...1490 4th rack travel in: 1600 Speed rpm : 0.00...1.00 LOW TDIE 1 Control lever position degrees: 76...84 Setting point w/out bumper spring : 300 Speed rpm Rack travel in mm: 6.5 Testina: Speed יהמיו : 200 Minimum rack trave: 8.00 : 300 rpm Rack travel in mm : 6.40...6.60 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm Pressure hPa : -Rack travel mm : 10.30...10.40 Measurement 1/min: 500 Speed 1st pressure hPa : 200 Rack travel in m: 11.20...11.30 2nd pressure hPa : 350 Rack travel in m: 12.40...12.70 3rd pressure hPa : 1000 Rack travel in m: 13.10...13.20 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 : 750 Speed rpm Del.quantity cm3/: 87.0...91.0 1000 s: (85.0...93.0) cm3 : 5.00 Spread 1000 s: (7.0)

Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 36.0...38.0 1000 s: (34.0...40.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.10 rpm : 1345...1355 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 100.0...110.0 1000 s: (97.0...113.0) LOW IDLE Speed rpm : 300 Rack travel in mm : 6.40...6.60 Del.quantity cm3/: 10.0...14.0 1000 s: (7.5...16.5) cm3 : 3.50 1000 s: (5.50) Spread Remarks: :

Note remarks

Test sheet

: IHC 7,6 W 8

Edition

: 26.04.91

Replaces

Test oil

: ISO-4113

Combination no.

: 0 403 446 282

Injection pump

Pump designation : PES6MW100/320RS1198

EP type number

: 0 413 406 188

Governor

Governor design. : RQV350...1200MW46-39

Governer no.

: 0 420 083 246

Customer-spec. information Customer

: NAVISTAR

Engine

: DTA-466

1st version kW

: 186.0

Rated speed

: 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 2 417 413 038

Inlet press., bar: 2.80

Test nozzle holder

assembly

: 1 688 901 101

Opening

pressure, bar

: 207...210

Orifice plate

diameter mm

: 0,6

Test lines

: 1 680 750 008

Outside diameter

x Wall thickness

x Length mm

: 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.25...3.35 : (3.20...3.40) Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

Tolerance + - °

: 0.50 (0.75)

BASIC SETTING

1st speed

rpm: 800

Rack travel in mm : 12.10...12.20

Del.quantity cm3/: 13.0...13.2

100 s: (12.8...13.4)

Spread

cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0 Rack travel in mm : 5.2...5.4 Del.quantity cm3/ : 1.6...2.0 100 s: (1.3...2.2) Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

: 9.80...10.20 travel mm

rpm : 1250 2nd speed

: 7.90...8.10 travel mm

3rd speed rpm : 550

: 3.10...3.70 travel mm : 350 4th speed rpm

travel mm

: 1.30...1.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 800

Aneroid pressure h: 1200

: 130.0...132.0 Del.quantity

1000 : (128.0...134.0)

cm3

: 3.50

Spread

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 102...110

Testing:

1st rack travel in: 11.50

Speed : 1270...1290 rpm

2nd rack travel in: 4.00

: 1400...1410 Speed rpm

4th rack travel in: 1500

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 70...78

Setting point w/out bumper spring

rpm : 350 Rack travel in mm : 5.3

Testing:

Speed : 100 nom

Minimum rack trave: 9.00

Speed : 350 COM

Rack travel in mm : 5.20...5.40

CONSTANT REGULATION

Speed : 300...450 rpm

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 rpm

Pressure hPa

Rack travel : 9.10...9.20 mm

Measurement

1/min: 500 Speed

1st pressure hPa : 225

Rack travel in m: 9.80...9.90

2nd pressure hPa : 490

Rack travel in m: 11.20...11.60

3rd pressure hPa : 1200 Rack travel in m: 12.10...12.20

START CUT-OUT

1/min: 280 (290) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

: 1200 Speed rpm

Del.quantity cm3/: 128.5...132.5 1000 s: (126.5...134.5)

cm3 : 6.50Spread

1000 s: (7.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 69.5...71.5

1000 s: (67.5...73.5)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 11.50

Speed rpm : 1270...1290

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 150.0...190.0 1000 s: (145.0...195.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350 Rack travel in mm : 5.20...5.40

Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5) Spread cm3: 3.50

1000 s: (5.50)

Remarks:

: IHC #1817695C91

Only perform pump setting with original overflow valve without IH hose and restrictor 1.2 mm diameter.

In unlatched condition, do not operate greater than n = 500 1/min

Set shutoff stop 1.5...2.0 mm before

shutoff.

Note remarks

Test sheet : IHC 7,6 W 7 Edition : 24.04.91

Replaces

Test oil : ISO-4113

Combination no. : 0 403 446 283

Injection pump

Pump designation : PES6MW100/320RS/198

EP type number : 0 413 406 188

Governor

Governor design. : RQV350...1200MW46-40

Governer no. : 0 420 083 247

Customer-spec. information Customer : NAVISTAR

: DTA-466 Engine

1st version kW : 186.0 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 038

Inlet press., bar: 2.80

Test nozzle holder

: 1 688 901 101 assembly

Opening 1

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm

: 3.25...3.35 : (3.20...3.40) Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 800 1st speed

Rack travel in mm: 12.50...12.60

Del.quantity cm3/: 3.3...13.5

100 s: (13.1...13.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0Rack travel in mm : 5.2...5.4 Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

: 9.80...10.20 travel mm

2nd speed : 1250 rpm

: 7.90...8.10 travel mm

3rd speed : 550 rpm travel mm

: 3.10...3.70

: 350 4th speed rpm

travel mm : 1.30...1.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 800

Aneroid pressure h: 1200

: 133.5...135.5 : (131.5...137.5) : 3.50 Del.quantity 1000

cm3 Spread

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 102...110

Testina:

1st rack travel in: 11.50

rpm : 1270...1290 Speed

2nd rack travel in: 4.00

rpm : 1400...1410 Speed

4th rack travel in: 1500

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 70...78

Setting point w/out bumper spring

rpm : 350 Speed Rack travel in mm: 5.3

Testina:

Speed rom : 100

Minimum rack trave: 9.00

rpm : 350

Rack travel in mm : 5.20...5.40

CONSTANT REGULATION

rpm : 300...450 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rpm

hPa : Pressure

Rack travel mm : 9.00...9.10

Measurement

1/min: 500 Speed

1st pressure hPa : 335 Rack travel in m: 10.00...10.10

2nd pressure hPa : 645

Rack travel in m: 11.40...11.80

3rd pressure hPa : 1200

Rack travel in m: 12.50...12.60

START CUT-OUT

1/min: 280 (290) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm : 1200 Del.quantity cm3/ : 132.0...136.0 1000 s: (130.0...138.0)

cm3 : 6.50Spread

1000 s: (7.0)

Aneroid pressure h: -

J22

Speed rpm : 500 Del.quantity cm3/ : 68.0...70.0 1000 s: (66.0...72.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.50

Speed : 1270...1290 rom

STARTING FUEL DELIVERY

Speed rpm

Del.quantity cm3/: 150.0...190.0 1000 s: (145.0...195.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350 Rack travel in mm : 5.20...5.40

Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5) Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

: IHC #1817695C91

Only perform pump setting with original overflow valve without IH hose and restrictor 1.2 mm diameter.

In unlatched condition, do not operate greater than n = 500 1/min

Set shutoff stop 1.5...2.0 mm before

shutoff.

Note remarks

Test sheet : RVI 6,2 J Edition : 26.04.91

Replaces

: ISO-4113 Test oil

Combination no. : D 403 446 285

Injection pump

Pump designation : PES6MW100/320RS1214

EP type number : 0 413 406 204

Governor

Governor design. : RQV275...1250MW115K

: 0 420 083 994 Governer no.

Customer-spec. information Customer : RVI

: MIDR 060226 W Engine

1st version kW : 151.0 : 2500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 033

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 101

Opening 1 and 1

: 172...175 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 4.20...4.30

: (4.15...4.35)

Rack travel in mm : 16.50...19.50 : 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1250

Rack travel in mm : 12.00...12.10

Del.guantity cm3/: 11.4...11.6

100 s: (11.2...11.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 275.0 Rack travel in mm : 4.50...4.70 Del.quantity cm3/: 2.0...2.4

100 s: (1.7...2.6)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

> Degree: -1 rpm : 1360

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Speed rpm : 1250 Aneroid pressure h: 1000

: 114.0...116.0 Del.quantity

1000 : (112.0...118.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 114...122

Testing:

1st rack travel in: 11.00 Speed rpm : 1320...1340

2nd rack travel in: 4.00

: 1430...1470 Speed rom

4th rack travel in: 1600

rom : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 60...68 Setting point w/out bumper spring Speed rpm : 275 Rack travel in mm : 7.4 Testing: Speed rpm : 200 Minimum rack trave: 5.00 Speed rpm : 275 Rack travel in mm : 4.50...4.70 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1250 Rack travel in m: 12.00...12.10 2nd speed rpm : 700 Rack travel in m: 11.10...11.20 3rd speed rpm : 1000 Rack travel in m: 11.30...11.50 4th speed rpm : 500 Rack travel in m: 10.50...10.70 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : 1000 Pressure Rack travel mm : 12.00...12.10 Measurement Speed 1/min : 500 1st pressure hPa : -Rack travel in m: 8.90...9.00 2nd pressure hPa : 200 Rack travel in m: 9.30...9.60 3rd pressure hPa : 320 Rack travel in m: 10.20...10.30 START CUT-OUT 1/min : 200 (220) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 Speed rpm : 700 Del.quantity cm3/ : 107.5...110.5 1000 s: (105.0...113.0) cm3 : 5.00Spread

1000 s: (7.0)

Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 70.5...72.5 1000 s: (68.5...74.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.00 Speed rpm : 1320...1340 STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 88.0...102.0 1000 s: (85.0...105.0) Rack travel in mm : 19.50...21.00 LOW IDLE rpm : 275 Speed Rack travel in mm : 4.50...4.70 Del.quantity cm3/: 20.0...24.0 1000 s: (17.5...26.5) Spread cm3 : 3.50 1000 s: (5.00) Remarks: FEHLENDEN TEXT ÜBERSETZEN

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Note remarks

Test sheet : RVI 6,2 K Edition : 26.04.91

Replaces

Test oil : ISO-4113

Combination no. : 0 403 446 286

Injection pump

Pump designation : PES6MW100/320RS1216

EP type number : 0 413 406 206

Governor

Governor design. : RQV350...1175MW113-2

Governer no. : 0 420 083 248

Customer-spec. information

Customer : RVI

: MIDR 060226 X Engine

1st version kW : 166.0 Rated speed : 2350

TEST BENCH REQUIREMENTS

Test cil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 033

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 172...175 pressure, bar

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 008

Outside diameter

x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 4.20...4.30

: (4.15...4.35)

Rack travel in mm : 11.50...14.50

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1175

Del.quantity cm3/: 11.7...11.9

100 s: (11.5...12.1)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 275.0
Rack travel in mm : 7.3...7.5
Del.quantity cm3/ : 2.0...2.4

100 s: (1.7...2.6)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1360 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1175

Aneroid pressure h: 1000

Del.quantity : 177.0...121.0)

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 114...122

Testing:

1st rack travel in: 11.00

rpm : 1250...1260 Speed

2nd rack travel in: 4.00

rpm : 1415...1455 Speed

4th rack travel in: 1600

: 0.00...1.00 Speed rom

LOW IDLE 1 Control lever position degrees: 60...68 Setting point w/out bumper spring nom Rack travel in mm: 7.4 Testing: Speed : 200 rpm Minimum rack trave: 6.00 Speed rpm : 275 Rack travel in mm : 4.50...4.70 Aneroid/Altitude Compensator Test 1st version Setting Speed rom : 500 Pressure hPa : 1000 Rack travel mm : 11.90...12.00 Measurement Speed 1/min: 500 1st pressure hPa : -Rack travel in m: 6.70...6.80 2nd pressure hPa : 240 Rack travel in m: 7.80...8.10 3rd pressure hPa : 600 Rack travel in m: 11.50...11.60 START CUT-OUT 1/min: 260 (280) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 : 700 Speed rpm Del.quantity cm3/: 124.0...127.0 1000 s: (121.5...129.5) cm3 : 5.00 Spread 1000 s: (7.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 60.0...62.0 1000 s: (58.0...64.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 11.00

rpm : 1250...1260 Speed

J26

## STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 88.0...102.0 1000 s: (85.0...105.0) Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 275
Rack travel in mm : 4.50...4.70
Del.quantity cm3/ : 20.0...24.0
1000 s: (17.5...26.5)

Spread cm3 : 3.501000 s: (5.00)

Remarks:

FEHLENDEN TEXT ÜBERSETZEN У

Note remarks

Test sheet : MAN 7,2 V 1
Edition : 24.04.91
Replaces : 18.02.91
Test oil : ISO-4113

Combination no. : 0 403 456 114

Injection pump

Pump designation : PES6MW100/321RS1201

EP type number : 0 413 406 190

Governor

Governor design. : RQV250...1200MW83-2

Governer no. : 0 420 083 216

Customer—spec. information Customer : MAN

Engine : 0 0826 LF02

1st version kW : 169.0 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60 : (3.45...3.65) Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - \cdot : 0.50 (0.75)$ 

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 12.50...12.60

Del.quantity cm3/: 13.7...13.9

100 s: (13.5...14.1)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0 Rack travel in mm : 5.2...5.4 Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.3 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1250

travel mm : 10.50...10.60

2nd speed rpm : 810

travel mm : 5.90...6.10

3rd speed rpm : 500

travel mm : 3.70...4.30

4th speed rpm : 250

travel mm : 1.20...1.60

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm: 1300

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 1000

Del.quantity : 137.0...139.0 1000 : (135.0...141.0)

1000 : (135.0...141 Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED 1st version Control Lever position degrees: 120...128 Testing: 1st rack travel in: 11.50 Speed rpm : 1245...1260 2nd rack travel in: 4.00 : 1320...1350 Speed rpm 4th rack travel in: 1400 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 70...78
Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 5.3 Testing: Speed : 100 CDM1 Minimum rack trave: 7.00 Speed rom Rack travel in mm : 5.20...5.40 CONSTANT REGULATION rpm : 330...420 Speed Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm hPa : 170 Pressure Rack travel mm : 10.30...10.40 Measurement  $1/\min : 500$ Speed 1st pressure hPa : -Rack travel in m: 10.10...10.20 2nd pressure hPa : 550
Rack travel in m: 12.10...12.40
3rd pressure hPa : 1000
Rack travel in m: 12.50...12.60 START CUT-OUT Speed 1/min: 170 (200) FUEL DELIVERY CHARACTERISTICS

Del.quantity cm3/: 135.0...138.0 1000 s: (132.5...140.5) Spread cm3 : 5.00 1000 s: (7.0) Aneroid pressure h: 1000 Speed : 800 rpm Del.quantity cm3/: 138.0...141.0 1000 s: (135.5...143.5) Aneroid pressure h: 1000 Speed rom : 1200 Del.quantity cm3/: 136.0...139.0 1000 s: (133.5...141.5) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 74.0...76.0 1000 s: (72.0...78.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.50 Speed rpm : 1245...1260 STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 130.0...140.0 1000 s: (127.0...143.0) LOW IDLE Speed rpm : 250 Rack travel in mm : 5.20...5.40 Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5) cm3 : 3.50 Spread 1000 s: (5.50) Remarks: : MAN #3-7135

Start-of-delivery mark is at start of delivery of cylinder 1

Speed

1st version

Aneroid pressure h: 1000

rom : 600

Note remarks

: CUM 8,3 Q : 26.04.91 : 29.06.90 Test sheet Edition Replaces Test oil : ISO-4113

Combination no. : 0 403 466 123

Injection pump

Pump designation : PES6Mw100/120RS1137-

: 0 413 406 180 EP type number

Governor

: RSV500...1250MW2A319 Governor design.

-16

: 0 420 085 130 Governer no.

Customer-spec. information Customer : CUMMINS

Engine : 6 CTA-8.3 L

1st version kW : 171.0 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Opening 1997

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

K01

Test pressure, bar: 30...32

: 3.50...3.60 Prestroke mm

: (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasina

Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1250 1st speed

Rack travel in mm : 12.60...12.70

Del.quantity cm3/: 13.1...13.3

100 s: (12.9...13.5)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 500.0 Rack travel in mm : 9.4...9.6

Del.quantity cm3/ : 5.1...5.5 100 s: (4.9...5.8)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm: 0.30...1.00

Governor spring pre-tension Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1250 Speed

: 131.0...133.0 Del.quantity 1000 : (129.0...135.0)

: 3.50

Spread cm3

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 41...49

Setting point:

Speed rpm : 800 Rack travel in mm: 0.6

Testing:

1st rack travel in: 11.60

rpm : 1320...1330 Speed

2nd rack travel in: 4.00

rpm : 1360...1370 Speed

3rd rack travel in: 4.00

Speed rpm : 1360...1390 4th rack travel in: 1550

rpm : 0.30...1.70 Speed

LOW IDLE 1 Control lever

position degrees: 19...27

Setting point w/out bumper spring

LOW : 500

Rack travel in mm: 9.0

Testing:

Speed : 100 rpm

Minimum rack trave: 19.00 rpm : 500 Speed

Rack travel in mm : 8,90...9.10

Rack travel in mm : 2.00

rpm : 540...600 Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Speed : 750 rpm:

Del.quantity cm3/: 123.5...126.5 1000 s: (121.0...129.0) Spread cm3 : 5.00

1000 s: (7.0)

**BREAKAWAY** 

1st version

imm rack travel less than

full load rack tr: 11.60

Speed : 1320...1330 rom

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 125.0...145.0 1000 s: (122.0...148.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 500 Rack travel in mm : 9.40...9.60

K02

Del.quantity cm3/: 51.5...55.5

1000 s: (49.0...58.0)

cm3 : 3.50 Spread

1000 s: (5.50)

Remarks:

: CUM #3918357

Start-of-delivery mark 11° cam angle

after start of delivery cyl. 1

Note remarks

Test sheet : MB 6,0 H 1 : 24.04.91 : 30.03.90 Edition Replaces Test oil : ISO-4113

Combination no. : 0 403 476 080

Injection pump

Pump designation : PES6MW100/720RS1191

EP type number : 0 413 406 179

Governor

Governor design. : RSV350...1300Mw0A329

: 0 420 085 136 Governer no.

Customer-spec. information Customer : MB-NFZ

Engine : OM 366 LA

: 170.0 1st version kW : 2600 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

: 1 680 750 015 Test Lines

Outside diameter

x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60 : (3.45...3.65)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1280

Rack travel in mm : 14.00...14.10

Del.quantity cm3/: 11.2...11.4

100 s: (11.0...11.6)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 350.0Rack travel in mm: 6.0...6.2

Del.quantity cm3/: 0.9...1.3 100 s: (0.6...1.5) Spread cm3 : 0.3 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 5.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Speed rpm : 1280 Aneroid pressure h: 1000

1000 : (110.0...114.0 cm3 : 3.50 Del.guantity

Spread 1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 105...113

Setting point:

Speed : 800 rpm Rack travel in mm: 0.6

Testing:

**K03** 

1st rack travel in: 13.00 rpm : 1330...1340 Speed 2nd rack travel in: 4.00 rpm : 1420...1450 Speed 4th rack travel in: 1550 rom : 0.30...1.70Speed LOW IDLE 1 Control Lever position degrees: 75...83 Setting point w/out bumper spring rpm : 350 Speed Rack travel in mm: 6.1 Testing: Speed rpm : 100 Minimum rack trave: 19.00 rpm : 350 Rack travel in mm : 6.00...6.20 SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm hPa : Pressure Rack travel mm : 10.10...10.20 Measurement Speed  $1/\min : 500$ 1st pressure hPa : 350 Rack travel in m: 11.30...11.40 2nd pressure hPa : 500 Rack travel in m: 12.40...12.70 3rd pressure hPa : 1000 Rack travel in m: 14.00...14.10 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 Speed rpm : 600 Del.quantity cm3/ : 101.0...104.0 1000 s: (98.5...106.5) Spread : 5.00 Cm3 1000 s: (7.0) Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 35.0...37.0 1000 s: (33.0...39.0) 1st version 1mm rack travel less than

full load rack tr: 13.00 Speed rpm : 1330...1340

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 100.0...110.0 1000 s: (97.0...113.0)

LOW IDLE

Remarks:

Test hydr. Locking device for starting with 500...1000 hPa air pressure.

BREAKAWAY

K04

Note remarks

: FOR 6,6 q : 08.05.91 Test sheet Edition Replaces : 16.1.91 Test oil : ISO-4113

Combination no. : 9 400 085 331

Injection pump

Pump designation : PES6A95D410RS2800 : 9 400 084 024 EP type number

Governor

Governor design. : RGV375...1400AB1257L

: 9 420 080 299 Governer no.

Customer-spec. information Customer : FNH

: 6.6 L - NA Engine

: 108.9 1st version kW : 2800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.15...3.25 Prestroke mm : (3.10...3.30)

Rack travel in mm : 9.00...12.00

Firing order

Phasing : 0-60-120-180-240-300

: 1-5-3-6-2-4

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00

& maximum rack tra: 21.00

Difference ° CS : 2.00...3.00

BASIC SETTING

1st speed rom: 1400

Rack travel in mm : 10.70...10.80

Del.quantity cm3/: 7.8...8.0

100 s: (7.6...8.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 375.0

Rack travel in mm : 6.3...6.5 Del.quantity cm3/: 0.4...1.0

100 s: (0.3...1.2) cm3 : 0.3Spread

100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 14201st speed

: 8.50...8.60 travel mm

rpm : 350 : 1.30...1.60 2nd speed

travel mm

: 700 3rd speed rpm travel mm

: 4.20...4.60

rpm : 1100 4th speed

travel mm : 6.10...6.40

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1400 Speed

Rack travel in mm: 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del.quantity : 78.0...80.0 1000 : (76.0...82.0) : 3.50 Spread cm3 1000 : (6.00)

RATED SPEED

1st version Control Lever

position degrees: 114...122

Testina:

1st rack travel in: 9.70 rpm : 1450...1460 Speed 2nd rack travel in: 4.00

rpm : 1540...1570 Speed 4th rack travel in: 1700

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 67...75

Testina:

Speed rpm : 100 Minimum rack trave: 9.50 Speed rpm : 375 Rack travel in mm : 6.30...6.50

CONSTANT REGULATION

rpm : 460...530 Speed

TORQUE CONTROL

Dimension a mm : 0.50

Torque control curve - 1st version

rpm : 1400 1st speed

Rack travel in m: 10.70...10.80

rpm : 500 2nd speed

Rack travel in m: 11.20...11.30

rpm : 900 3rd speed

Rack travel in m: 11.20...11.30

rpm : 1150 4th speed

Rack travel in m: 11.00...11.10

START CUT-OUT

1/min : 290 (310) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500 Del.quantity cm3/ : 63.0...66.0 1000 s: (60.5...68.5)

: 900 Speed rpm

Del.quantity cm3/: 74.5...77.5 1000 s: (72.0...80.0)

: 1150 Speed

man

Del.quantity cm3/: 76.0...79.0 1000 s: (73.5...76.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.70

rpm : 1450...1460 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 115.0...129.0 1000 s: (112.0...132.0) Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm

Rack travel in mm : 6.30...6.50 Del.quantity cm3/: 4.5...10.5 1000 s: (3.0...12.0)

cm3 : 3.50Spread 1000 s: (5.50)

Remarks:

Set shutoff stop 1.5...2.0 mm before

shutoff.

Note remarks

: MB 6.0 i 3 : 08.05.91 Test sheet Edition Replaces : 9.4.91 : ISO-4113 Test oil

: 9 400 087 429 Combination no.

Injection pump

Pump designation : PES6P120A720RS3256-1

: 9 400 087 077 EP type number

Governor

Governor design. : RQV300...1300PA963

: 9 420 080 283 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: OM 366 LA Engine

1st version kW : 156.6 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.30...4.40 : (4.25...4.45)

Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance  $+ - \circ : 0.50 (0.75)$ 

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1300

Rack travel in mm : 12.90...13.00

Del.quantity cm3/: 15.7...15.9

100 s: (15.4...16.2)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm: 8.6...8.9 Del.quantity cm3/: 1.0...1.6

100 s: (0.7...1.9)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rom :

1.20...1.70 travel mm

2nd speed rpm : 650

: 3.80...4.30 travel mm

1060 3rd speed rpm :

: 5.60...6.10 : 1358 travel mm

4th speed rpm

travel mm : 8.20...8.70

rpm : 1461 5th speed

: 9.80...10.30 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1350 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version rpm : 1300 Speed Aneroid pressure h: 1000 Del.quantity : 157.0...159.0 1000 : (154.0...162.0) : 5.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 116...124 Testing: 1st rack travel in: 11.90 Speed rpm : 1340...1350 2nd rack travel in: 4.00 Speed rpm : 1420...1450 4th rack travel in: 1550 Speed rpm : 0.00...1.00 LOW IDLE 1 Control lever position degrees: 86...94 Testing: Speed : 200 r pm Minimum rack trave: 10.20 rpm : 300 Rack travel in mm : 8.80...9.20 CONSTANT REGULATION rpm : 300...450 Speed Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm hPa : 1000 Pressure Rack travel mm : 12.90...13.10 Measurement Speed  $1/\min : 500$ 1st pressure hPa : -Rack travel in m: 10.60...10.90 2nd pressure hPa : 300 Rack travel in m: 11.10...11.30 3rd pressure hPa : 500 Rack travel in m: 12.10...12.30 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 1000 : 800 Speed rpm Del.quantity cm3/: 142.0...146.0 1000 s: (139.0...149.0) cm3 : 8.00Spread 1000 s: (12.) Aneroid pressure h: -Speed rpm : 500
Del.quantity cm3/: 65.0...67.0
1000 s: (62.0...70.0)
Spread cm3 : 8.00 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.90 rpm : 1340...1350 Speed STARTING FUEL DELIVERY : 100 rpm Del.quantity cm3/: 100.0...120.0 1000 s: (96.0...124.0)

Remarks:

•

Note remarks

Test sheet : MB 6.0 i 4
Edition : 08.05.91
Replaces : 9.4.91
Test oil : ISO-4113

Combination no. : 9 400 087 430

Injection pump

Pump designation : PES6P120A720RS3256-1

EP type number : 9 400 087 077

Governor

Governor design. : RQV300...1300PA963-1

Governer no. : 9 420 080 284

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M 366 LA

1st version kW : 171.5 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 019

Opening |

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.30...4.40

: (4.25...4.45)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1300

Rack travel in mm : 13.90...14.00

Del.quantity cm3/: 18.0...18.2

100 s: (17.7...18.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 8.6...8.9

Del.quantity cm3/: 1.0...1.6

100 s: (0.7...1.9) ead cm3 : 0.8

Spread cm3 : 0.8 100 s: (1.2)

(B) Setting of injection pump with governor

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300 travel mm : 1.20...1.70

2nd speed rpm : 650

travel mm : 3.80...4.30

3rd speed rpm : 1060

travel mm : 5.60...6.10

4th speed rpm : 1358

travel mm : 8.20...8.70

5th speed rpm: 1461

travel mm : 9.80...10.30

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm: 1350

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version rpm : 1300 Speed Aneroid pressure h: 1000 Del.quantity : 180.0...185.0) : 5.00 cm3 Spread 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 117...125 Testing: 1st rack travel in: 12.90 Speed rpm : 1340...1350 2nd rack travel in: 4.00 rpm : 1445...1475 Speed 4th rack travel in: 1550 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 86...94 Testing: Speed rpm Minimum rack trave: 10.20 rpm : 300 Speed Rack travel in mm : 8.80...9.20 CONSTANT REGULATION rpm : 300...450 Speed Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm hPa : 1000 Pressure : 13.90...14.10 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 10.60...10.90 2nd pressure hPa : 300 Rack travel in m: 11.10...11.30 3rd pressure hPa : 700 Rack travel in m: 13.00...13.20 START CUT-OUT 1/min : 220 (240) Speed FUEL DELIVERY CHARACTERISTICS

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.90 Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 100.0...120.0 1000 s: (96.0...124.0)

Remarks:

:

Note remarks

: MB 6.0 i 2 : 08.05.91 Test sheet Edition Replaces : 9.4.91 Test oil : ISO-4113

: 9 400 087 431 Combination no.

Injection pump

Pump designation : PES6P120A720RS3256

: 9 400 087 071 EP type number

Governor

Governor design. : RQV300...1300PA963-2

: 9 420 080 285 Governer no.

Customer-spec, information

Customer : MERCEDES-BENZ

Engine : OM 366 LA

1st version kW : 141.7 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening |

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.30...4.40

: (4.25...4.45) Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1300

Rack travel in mm : 11.60...11.70

Del.quantity cm3/: 13.4...13.6

100 s: (13.1...13.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0Rack travel in mm: 8.6...8.9 Del.quantity cm3/: 1.0...1.6

100 s: (0.7...1.9)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 1.20...1.70 travel mm

2nd speed : 650 rpm

travel mm : 3.80...4.30 3rd speed : 1060 ngn

: 5.60...6.10 travel mm

: 1358 4th speed rpm

: 8.20...8.70 travel mm

5th speed rpm : 1461

: 9.80...10.30 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1350

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version rpm : 1300 Speed Aneroid pressure h: 1000 : 134.0...136.0 Del.quantity 1000 : (131.0...139.0) : 5.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 115...123 Testing: 1st rack travel in: 10.60 rpm : 1340...1350 Speed 2nd rack travel in: 4.00 rpm : 1410...1440 Speed 4th rack travel in: 1550 Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 86...94 Testing: Speed : 200 rpm Minimum rack trave: 10.20 Speed : 300 rom Rack travel in mm : 8.80...9.20 CONSTANT REGULATION rpm : 300...450 Speed Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm hPa : 1000 Pressure Rack travel mm : 11.60...11.80 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 10.60...10.90 2nd pressure hPa : 250 Rack travel in m: 10.80...11.00 3rd pressure hPa : 360 Rack travel in m: 11.30...11.50 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 1000 : 800 Speed rom Del.quantity cm3/: 114.0...118.0 1000 s: (111.0...121.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 65.0...67.0 1000 s: (62.0...70.0) cm3 : 8.00Spread 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.60 Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 90.0...110.0 1000 s: (86.0...114.0)

Remarks:

:

Note remarks

Test sheet : FOR 7,8 n 3 Edition : 08.05.91

Replaces

Test oil : ISO-4113

Combination no. : 9 400 087 441

Injection pump

Pump designation : PES6P110A720RS3267

EP type number : 9 400 087 072

Governor

Governor design. : RSV650...1250P8A528-

: 9 420 082 328 Governer no.

Customer-spec. information : FORD FNH Customer

: 7.8 L Engine

: 140.0 1st version kW : 2500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 9 401 087 403

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

: 1 680 750 015 Test lines

Outside diameter

x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.25...4.35 Prestroke mm

: (4.20...4.30)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasina : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1200 1st speed

Rack travel in mm : 13.20...13.30

Del.quantity cm3/: 13.2...13.4

100 s: (13.0...13.6)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 650.0 2nd speed Rack travel in mm: 5.9...6.1 Del.quantity cm3/: 0.8...1.2

100 s: (0.5...1.5)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 3.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1200 Speed

: 132.0...134.0 : (130.0...136.0) Del.quantity 1000

: 5.00 cm3

Spread 1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 99...107

Testing:

1st rack travel in: 12.20 Speed rpm : 1260...1270 2nd rack travel in: 4.00 Speed rpm : 1300...1320 4th rack travel in: 1400 Speed rpm : 0.30...1.70 LOW IDLE 1 Control lever position degrees: 73...81 Setting point w/out bumper spring Speed rpm : 650 Rack travel in mm: 6.0 Testing: Speed : 600 rpm Minimum rack trave: 10.00 rpm : 650 Rack travel in mm : 5.40...5.60 Rack travel in mm : 2.00 Speed : 685...745 rpm FUEL DELIVERY CHARACTERISTICS 1st version : 800 Speed rpm Del.quantity cm3/: 110.0...114.0 1000 s: (108.0...116.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 12.20 rpm : 1260...1270 Speed STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 135.0...155.0 1000 s: (131.0...159.0) Rack travel in mm : 20.00...21.00 LOW IDLE Speed rpm : 650 Rack travel in mm : 5.90...6.10 Del.quantity cm3/: 8.0...12.0 1000 s: (5.5...15.5) cm3 : 3.50 Spread 1000 s: (5.50) Remarks: APPLICATION

Combine-harvester

Note remarks

Test sheet : FOR 7,8 n 4 Edition : 08.05.91

Replaces Test oil : ISO-4113

Combination no. : 9 400 087 442

Injection pump

Pump designation : PES6P110A720RS3267

EP type number : 9 400 087 072

Governor

Governor design. : RSV650...1250P8A530-

Governer no. : 9 420 082 329

Customer—spec. information Customer : FORD - FNH

: 7.8 \ Engine

1st version kW : 165.0 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 9 401 087 403

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Opening.

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.25...4.35 Prestroke mm : (4.20...4.40)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00

& maximum rack tra: 21.00 Difference ° CS : 2.00...3.00

BASIC SETTING

1st speed rpm: 1200

Rack travel in mm : 13.50...13.60

Del.quantity cm3/: 13.7...13.9

100 s: (13.5...14.1)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 650.0 2nd speed Rack travel in mm: 5.9...6.1 Del.quantity cm3/: 1.1...1.5

100 s: (0.8...1.7) cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 Speed

rpm : 800 Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 3.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1200 Speed Aneroid pressure h: 1000

: 137.0...139.0

Aneroiu F. Del.quantity 1000 : (135.0...141.0) Spread

: 5.00 cm3 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 99...107

Testing:

1st rack travel in: 12.50

rpm : 1260...1270 Speed

2nd rack travel in: 4.00

rpm : 1300...1320 Speed

4th rack travel in: 1400

rpm : 0.30...1.70 Speed

LOW IDLE 1

Control lever

position degrees: 73...81

Setting point w/out bumper spring

rpm : 650

Rack travel in mm: 6.0

Testing:

Speed : 600 rpm

Minimum rack trave: 10.00

Speed : 650 rpm

Rack travel in mm : 5.40...5.60

Rack travel in mm : 2.00

Speed rom : 685...745

Aneroid/Altitude Compensator Test

1st version Settina

rpm : 1200 hPa : 1000 Speed man

Pressure

Rack travel mm : 13.50...13.60

Measurement

Speed 1/min: 1200

1st pressure hPa : -

Rack travel in m: 9.90...10.00

2nd pressure hPa : 600

Rack travel in m: 12.50...12.60

3rd pressure hPa : 400

Rack travel in m: 10.50...10.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

Speed rpm : 800 Del.quantity cm3/ : 117.5...119.5 1000 s: (115.5...121.5)

Aneroid pressure h: -

: 1200 Speed rom

Del.quantity cm3/: 79.0...81.0

1000 s: (77.0...83.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.50

Speed rpm : 1260...1270

STARTING FUEL DELIVERY

LOW IDLE

rpm : 650 Speed

Rack travel in mm : 5.90...6.10 Del.quantity cm3/: 11.0...15.0

1000 s: (8.5...17.5) cm3 : 3.50Spread

1000 s: (5.50)

Remarks:

APPLICATION

Combine-harvester

Note remarks

: FOR 7,8 n 5 Test sheet Edition : 08.05.91

Replaces

: ISO-4113 Test oil

: 9 400 087 443 Combination no.

Injection pump

Pump designation : PES6P110A720RS3267

: 9 400 087 072 EP type number

Governor

: RSV650...1250P8A530-Governor design.

: 7.8 l

: 9 420 082 330 Governer no.

Customer-spec. information : FORD -FNH

Customer

1st version kW : 180.0

Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil

Engine

inlet temp. °C : 38...42

Overflow valve

: 9 401 087 403

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 1 680 750 015 Test lines

Outside diameter

x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.25...4.35 : (4.20...4.40) Prestroke mm

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00

& maximum rack tra: 21.00

Difference ° CS : 2.00...3.00

BASIC SETTING

1st speed rpm: 1200

Rack travel in mm : 14.60...14.70

Del.guantity cm3/: 15.5...15.7

100 s: (15.3...15.9)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 650.0 Rack travel in mm : 5.9...6.1 Del.quantity cm3/ : 1.1...1.5

100 s: (0.8...1.7)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position Degree: -3

rpm : 800 Speed

Rack travel in mm: 0.30...1.00

Governor spring pre-tension Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200 Aneroid pressure h: 1000

Aneroid Del.quantity 1000 : 155.0...157.0

: (153.0...159.0)

: 5.00 Spread cm3 : (9.00)

1000

RATED SPEED

1st version

Control lever

position degrees: 98...106

Testina:

1st rack travel in: 13.60

rpm : 1260...1270

2nd rack travel in: 4.00

rpm : 1305...1325 Speed

4th rack travel in: 1400

rom : 0.30...1.70 Speed

LOW IDLE 1

Control lever

position degrees: 72...80

Setting point w/out bumper spring

rpm : 650 Rack travel in mm: 6.0

Testing:

: 600 Speed rom

Minimum rack trave: 10.00

Speed rpm : 650

Rack travel in mm : 5.40...5.60 Rack travel in mm : 2.00

: 685...745 Speed rom

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 1200 rom

Pressure hPa : 1000

: 14.60...14.70 Rack travel mm

Measurement

1/min: 1200 Speed

1st pressure hPa : -

Rack travel in m: 11.50...11.60

2nd pressure hPa : 600

Rack travel in m: 14.00...14.10

3rd pressure hPa : 400

Rack travel in m: 12.40...12.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

: 800 Speed rpm

Del.quantity cm3/: 131.0...135.0 1000 s: (129.0...137.0)

Aneroid pressure h: -

Speed : 1200 LDW

Del.quantity cm3/: 107.0...109.0 1000 s: (105.0...111.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.60

rpm : 1260...1270 Speed

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/: 135.0...155.0
1000 s: (131.0...159.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 650 Rack travel in mm : 5.90...6.10

Del.quantity cm3/: 11.0...15.0

1000 s: (8.5...17.5) cm3 : 3.50

Spread 1000 s: (5.50)

Remarks:

APPLICATION

Combine-harvester

Note remarks

: MB 6,0 i 5 : 08.05.91 Test sheet Edition : 9.4.91 Replaces Test oil : ISO-4113

Combination no. : 9 400 087 450

Injection pump

Pumo designation : PES6P120A720RS3256

EP type number : 9 400 087 071

Governor

Governor design. : RQV300...1300PA978

: 9 420 080 296 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: OM 366 LA Engine

: 126.8 1st version kW : 2600 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 019

Opening

: 207...210 pressure, bar

Orifice plate

: 0,8 diameter mm

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.30...4.40 Prestroke mm

: (4.25...4.45) Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 1

BASIC SETTING

rpm : 13001st speed

Rack travel in mm: 11.80...11.90

Del.quantity cm3/: 13.8...14.0

100 s: (13.5...14.3)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 8.6...8.9 Del.quantity cm3/: 1.0...1.6

100 s: (0.7...1.9)

cm3 : 0.8 Spread

100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

1.20...1.70 travel mm 650

2nd speed rpm travel mm

3.80...4.30 1060 3rd speed rpm

5.60...6.10 travel mm

: 1358 4th speed rpm

: 8.20...8.70 travel mm

5th speed rpm : 1461

: 9.80...10.30 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1350 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version rpm : 1300 Speed Aneroid pressure h: 1000 : 138.0...140.0 Del.quantity 1000 : (135.0...143.0) cm3 : 5.00Spread 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 114...122 Testing: 1st rack travel in: 10.80 rpm : 1340...1350 Speed 2nd rack travel in: 4.00 rpm : 1410...1440 Speed 4th rack travel in: 1550 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 86...94 Testing: Speed : 200 rpm Minimum rack trave: 10.20 Speed rpm : 300 Rack travel in mm : 8.80...9.20 CONSTANT REGULATION rpm : 300...450 Speed Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : 1000 Pressure Rack travel mm : 11.80...12.00 Measurement Speed 1/min: 500 1st pressure hPa : -Rack travel in m: 10.40...10.70 2nd pressure hPa : 250 Rack travel in m: 10.60...10.80 3rd pressure hPa : 360 Rack travel in m: 11.10...11.30

1st version Aneroid pressure h: 1000 Speed : 800 rpm Del.quantity cm3/ : 118.0...122.0 1000 s: (115.0...125.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: : 500 Speed rpm Del.quantity cm3/: 61.0...63.0 1000 s: (58.0...66.0) Spread cm3 : 8.001000 s: (12.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 10.80 Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 90.0...110.0 1000 s: (86.0...114.0)

Remarks:

START CUT-OUT

Speed 1/min: 220 (240)

FUEL DELIVERY CHARACTERISTICS

Note remarks

Test sheet : IHC 9,0 f 3 : 14.05.91 Edition : 14.10.87 Replaces Test oil : ISO-4113

Combination no. : 9 400 230 016

Injection pump

Pump designation : PES8A75D32ORS2463

Governor

Governor design. : RQV300...1500AB1059

DR

Customer-spec. information Customer : IHC

Engine : DV 550 C

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

Inlet press., bar: 2.5

Test nozzle holder

assembly : 0 681 343 009

Opening

: 172...175 pressure, bar

Test lines : 9 681 230 702

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Prestroke mm : 1.95...2.05 \* : (1.90...2.10)

Rack travel in mm: 10.70

: 3.95...4.05 Prestroke mm

: (3.90...4.10)\*\*

Rack travel in mm: 10.70

Firing order : 1-8-7-3-6-5-4-2 Phasing : 0-45-90-135-180-225-

270-315

: 0.50 (0.75) Tolerance + - °

BASIC SETTING

1st speed rpm: 1500

Rack travel in mm : 10.65...10.75

Del.guantity cm3/: 6.8...6.9

100 s: (-)

cm3 : 0.2Spread

100 s: (-)

rpm : 300 2nd speed Rack travel in mm: 6.00

Del.quantity cm3/: 1.6...2.0 \*\*

100 s: ⟨~⟩

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1600 Speed

Rack travel in mm : 15.00...18.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1500 Speed

: 68.0...69.0 Del.quantity

1000 : (64.5...70.5)

RATED SPEED

1st version

Control lever

position degrees: 64...72

Testing:

1st rack travel in: 9.70

rpm : 1600...1610 Speed

2nd rack travel in: 9...14

rpm : 1700 Speed

3rd rack travel in: 3.00...9.50

: 1800 Speed rpm 4th rack travel in: 2000

: 0.00...1.00 Speed rom

LOW IDLE 1 Control lever

position degrees: 6...14

Testing:

Speed : 200 rom

Minimum rack trave: 8.20 rpm : 300 Speed

Rack travel in mm : 5.40...7.30 Rack travel in mm : 3.05

Speed : 450 rpm Speed rpm : 600 Maximum rack trave: 2.60 : 870 Speed rpm Rack travel in mm : ...0.1

START CUT-OUT

1/min: 150...230 Speed

FUEL DELIVERY CHARACTERISTICS

1st version

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 9.70

rpm : 1600...1610 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 112.0...135.0 1000 s: (-)

LOW IDLE

Speed rpm : 300 Rack travel in mm : 17.0...21.0

Del.quantity cm3/: (-)

Remarks:

\* = Cylinders 1,7,6 and 4

\*\* = Cylinders 2,8,3 and 5

Note remarks

: DEE 7,6 j 5 : 13.05.91 Test sheet Edition

Replaces

Test oil : ISO-4113

Combination no. : 9 400 230 046

Injection pump

Pump designation : PES6A95D41ORS2561 : 9 410 230 006 EP type number

Governor

Governor design. : RSV600...1100A2C2048

: 9 420 234 157 Governer no.

Customer-spec, information Customer : JOHN DEERE

Engine : 6466T

1st version kW : 110.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 413 385 007

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 1.85...1.95 Prestroke mm

: (1.80...2.00)

Rack travel in mm : 10.50

: 1-5- 3- 6- 2- 4 Firing order

Phasing : 0-60-120-180-240-300

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm : 9.90...10.00

Del.guantity cm3/: 9.1...93

100 s: (8.9...9.5)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 600.0 Rack travel in mm : 5.0...5.2 Del.quantity cm3/ : 1.2...1.6

100 s: (0.9...1.8)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

> Degree: -3 rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

: 91.0...93.0 Del.quantity 1000

: (89.0...95.0)

: 3.50 cm3 Spread

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 44...52

Testing:

1st rack travel in: 8.90

rpm : 1145...1155 Speed

2nd rack travel in: 4.00

rpm : 1195...1225 Speed

4th rack travel in: 1300

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 24...32 Setting point w/out bumper spring

rpm : 600 Rack travel in mm: 4.6

Testing:

Speed rpm : 100 Minimum rack trave: 19.00 Speed rpm : 600

Rack travel in mm : 5.00...5.20

TORQUE CONTROL

Torque control curve - 1st version

rpm : 1100 1st speed

Rack travel in m: 9.90...10.00

rpm : 950 2nd speed

Rack travel in m: 10.70...10.90

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rom

Del.quantity cm3/: 104.0...108.0 1000 s: (101.5...110.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8.90

Speed rpm : 1145...1155

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 155.0...175.0

1000 s: (150.0...180.0)

Rack travel in mm : 19.00...21.00

HIGH IDLE

1st version

Speed rpm : 1200 Rack travel in mm : 4.70...4.90

LOW IDLE

rpm

Rack travel in mm : 5.00...5.20

Del.quantity cm3/: 12.0...16.0 1000 s: (9.5...18.5) Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

: JOHN DEERE # RE28880

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in

full-load delivery with torque-control

spring retainer.

Start-of-delivery mark = 15.5° after

start of delivery cyl. 1.

Note remarks

: DEE 7,6 j 4 : 13.05.91 Test sheet Edition : 14.1.88 Replaces Test oil : ISO-4113

Combination no. Injection pump

Pump designation : PES6A95D41ORS2561 EP type number : 9 410 230 006

Governor

: RSV600...1100A2C2049 Governor design.

-1L

: 9 400 230 047

: 9 420 234 158 Governer no.

Customer-spec. information : JOHN DEERE Customer

Engine : 6466TH-02

: 125.0 1st version kW : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 413 385 007

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_

BEGINNING OF DELIVERY Test pressure, bar: 27...29

: 1.85...1.95 Prestroke mm

: (1.80...2.00)

Rack travel in mm: 10.50

: 1-5- 3- 6- 2- 4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 10.60...10.70

Del.quantity cm3/: 10.7...10.9

100 s: (10.5...11.1)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 600.0 2nd speed Rack travel in mm : 4.9...5.1 Del.quantity cm3/: 1.2...1.6

100 s: (0.9...1.8)

cm3 : 0.3Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

: 107.0...109.0 Del.quantity 1000 : (105.0...111.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 43...51

Testing:

1st rack travel in: 9.60

rpm : 1145...1155 Speed

2nd rack travel in: 4.00

Speed rpm : 1200...1230 4th rack travel in: 1300

Speed rpm : 0.30...1.40

LOW IDLE 1 Control lever

position degrees: 24...32 Setting point w/out bumper spring

npm : 600 Rack travel in mm: 4.5

Testing:

Speed rpm : 100 Minimum rack trave: 19.00 : 600 rpm

Rack travel in mm : 4.90...5.10

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 10.60...10.70

2nd speed rpm : 950

Rack travel in m: 11.50...11.70

FUEL DELIVERY CHARACTERISTICS

1st version

Speed : 950 rpm

Del.quantity cm3/: 120.0...124.0 1000 s: (118.5...125.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.60

rpm : 1145...1155 Speed

STARTING FUEL DELIVERY

HIGH IDLE

1st version

: 1200 ומסח

Rack travel in mm : 4.70...4.90

LOW IDLE

Speed rpm : 600 Rack travel in mm : 4.90...5.10

Del.quantity cm3/: 12.0...16.0 1000 s: (9.5...18.5)

cm3 : 3.50 Spread 1000 s: (5.50)

Remarks:

: JOHN DEERE # RE28881

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in

full-load delivery with torque-control

spring retainer.

Start-of-delivery mark = 15.5° after

start of delivery cyl. 1.

Note remarks

: CUM 8,3 a62 : 13.05.91 Test sheet Edition : 18.2.91 Replaces

Test oil : ISO-4113

Combination no. : 9 400 230 111

Injection pump

Pump designation : PES6A100D320/3RS2691

: 9 410 230 030 EP type number

Governor

Governor design. : RSV450...1100A0c2190

-40R

: 0 420 233 246 Governer no.

Customer-spec. information : C.D.C. Customer

Engine : 6CT830

1st version kW : 134.2 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 101

Opening |

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.80...2.90 : (2.75...2.95) Prestroke mm

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no.

BASIC SETTING

1st speed നാന : 1100

Rack travel in mm : 11.20...11.30

Del.quantity cm3/: 10.3...10.5

100 s: (10.1...10.7)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 450.0

Rack travel in mm: 5.7...5.9 Del.quantity cm3/: 1.6...2.0

100 s: (1.4...2.2)

cm3 : 0.6Spread

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

: 103.5...105.5 Del.quantity 1000 : (101.5...107.5)

cm3 Spread : 4.00

: (6.50) 1000

RATED SPEED

1st version

Control lever

position degrees: 49...57

Testing:

1st rack travel in: 10.20 Speed rpm : 1140...1150 2nd rack ravel in: 4.00

Speed

rpm : 1210...1240

3rd rack travel in: 4.00

Speed

rom : 1215...1245

4th rack travel in: 1300

Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: 31...39

Setting point Wout bumper spring

Speed

rpn: : 450

Rack travel in mm: 5.3

Testing:

Speed : 100 rom

Minimum rack trave: 19.00

: 450 Speed rpm

Rack travel in mm : 5.70...5.90

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 11.20...11.30 2nd speed rpm : 750 Rack travel in m: 12.00...12.20

FUEL DELIVERY CHARACTERISTICS

1st version

: 750 Speed rpm

Del.quantity cm3/: 111.5...115.5

1000 s: (109.5...117.5)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 10.20

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

LOW IDLE

rpm : 450

Rack travel in mm : 5.70...5.90

Del.quantity cm3/: 16.5...20.5 1000 s: (14.5...22.5)

Spread cm3 : 6.00

1000 s: (8.00)

Remarks:

: C.D.C # 3915684

Adjustment without torque-control spring retainer with 0,5 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Start-of-delivery mark 11° cam angle after start of delivery cyl. 1

Adjust stop lever to 0.5...1.0 mm before stop.

Note remarks

Test sheet : KHD 15,8 c2 : 03.06.91 Edition : 9.1.89 Replaces

Test oil : ISO-4113

Combination no. : 0 400 649 188

Injection pump

Pump designation: PE10A95D610/4LS2452

EP type number : 0 410 699 998

Governor

Governor design. : RQV300...1150AB988DL

Governer no. : 0 420 214 229

Customer-spec. information Customer

Engine : F10L413F

: 216.0 1st version kW Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

: 172...175 pressure, bar

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00x2.00x600 Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10 : (1.95...2.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 10- 9- 4- 3- 6-

5- 8- 7- 2

: 0-27-72-99-144-171-216-243-288-315 : 0.50 (0.75) Phasing

Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1150

Rack travel in mm : 10.00...10.10

Del.quantity cm3/: 9.1...9.2

100 s: (8.9...9.4)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 300.0 Rack travel in mm : 7.0...7.2

Del.quantity cm3/: 1.7...2.3

100 s: (1.4...2.5)

cm3 : 0.3 Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-Lever position

Degree: -1

rpm : 1150 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del.quantity

: 91.5...92.5 : (89.5...94.5) 1000

: 3.00 Spread cm3

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 117...125

Testing:

1st rack travel in: 9.00

rpm : 1190...1200 Speed

2nd rack travel in: 4.00

rpm : 1235...1265 Speed

4th rack travel in: 1350

: 0.00...1.00 Speed rpm

L01

LOW IDLE 1 Control lever

position degrees: 80...88

Testing:

Speed rpm : 200 Minimum rack trave: 9.00

Speed rpm : 300 Rack travel in mm : 5.90...6.10

: 750 Speed rpm Maximum rack trave: 1.00

CONSTANT REGULATION

rpm : 320...390 Speed

TORQUE CONTROL

Dimension a mm : 0.50

Torque control curve - 1st version

1st speed rpm : 1150

Rack travel in m: 10.00...10.10

2nd speed rpm : 975

Rack travel in m: 10.20...10.40 3rd speed rpm : 700

Rack travel in m: 10.50...10.60

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 700 Speed

Del.quantity cm3/: 90.0...93.0 1000 s: (87.5...95.5)

RACK STOP ADJUSTMENT

Speed rpm : 600

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 9.00

rpm : 1190...1200 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 300

L02

Rack travel in mm : 7.00...7.20 Del.quantity cm3/ : 17.0...23.0 1000 s: (14.5...25.5)

cm3 : 3.50 Spread 1000 s: (5.50)

Remarks:

#### Note remarks

: DAF 8,3 n 7 : 27.05.91 Test sheet Edition : 21.5.90 Replaces Test oil : ISO-4113

Combination no. : 0 400 676 178

Injection pump

Pump designation : PE6A95D410RS2575 EP type number : 0 410 696 984

Governor

Governor design. : RSV250...750A7C2201L

Governer no. : 0 420 232 444

Customer-spec. information Customer

Engine : DHTD 825

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening |

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.00...2.10 Prestroke mm : (1.95...2.15)

Rack travel in mm : 7.50...10.50 Firing order : 1-5-3-6-

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50 & maximum rack tra: 21.00 Difference ° CS : 3.00...4.00

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 13.20...13.30

Del.quantity cm3/: 11.0...11.1

100 s: (10.8...11.3)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 250.0 2nd speed Rack travel in mm: 6.0...6.2 Del.quantity cm3/: 0.7...1.3

100 s: (0.5...1.4)

cm3 : 0.3Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...0.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm

Del.quantity : 110.5...111.5 1000 : (108.5...113.5)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 89...97

Testing:

1st rack travel in: 12.20 Speed rpm : 750...755 2nd rack travel in: 4.00

rpm : 782...797 Speed

4th rack travel in: 950 rpm : 0.30...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 65...73 Setting point w/out bumper spring

Speed rpm : 250 Rack travel in mm : 6.1

Testing:

Speed rpm Minimum rack trave: 19.50 rpm : 250 Speed Rack travel in mm : 6.00...6.20

Rack travel in mm : 2.00 Speed rpm : 265...325

SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00

# BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.20 Speed rpm : 750...755 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Rack travel in mm : 19.50...21.00

LOW IDLE

rpm : 250 Speed

Rack travel in mm : 6.00...6.20 Del.quantity cm3/ : 7.0...13.0 1000 s: (5.5...14.5) cm3 : 3.50

Spread 1000 s: (5.50)

Remarks:

APPLICATION

Generator

Note remarks

: DAF 8,3 n 8 : 27.05.91 Test sheet Edition : 27.2.91 Replaces Test oil : ISO-4113

: 0 400 676 192 Combination no.

Injection pump

Pump designation : PE6A95D410RS2575 EP type number : 0 410 696 984

Governor

: RSV250...750A7C2201-Governor design.

1L

: 0 420 232 563 Governer no.

Customer-spec. information Customer : DAF

Engine : DH 825

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 2.00...2.10 : (1.95...2.15) Prestroke mm

Rack travel in mm : 7.50...10.50 Firing order : 1-5-3-6-2-

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50 & maximum rack tra: 21.00

Difference ° CS : 3.00...4.00

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 13.20...13.30

Del.quantity cm3/: 11.0...11.1

100 s: (10.8...11.3)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 250.0Rack travel in mm: 6.0...6.2 Del.quantity cm3/: 0.7...1.3 100 s: (0.5...1.4) Spread cm3: 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3
Speed rpm: 800
Rack travel in mm: 0.30...0.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

: 110.5...111.5 : (108.5...113.5) : 3.50 Del.quantity 1000

Spread cm3

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 89...97

Testing:

1st rack travel in: 12.20 rpm : 750...755 Speed

2nd rack travel in: 4.00

Speed rpm : 782...797 4th rack travel in: 950 Speed rpm : 0.30...1.40

LOW IDLE 1 Control Lever

position degrees: 65...73

Setting point w/out bumper spring Speed rpm : 250 Rack travel in mm : 6.1

Testing:

Speed rpm: 100
Minimum rack trave: 19.50
Speed rpm: 250
Rack travel in mm: 6.00...6.20
Rack travel in mm: 2.00
Speed rpm: 265...325

SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 12.20 rpm : 750...755 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 6.00...6.20
Del.quantity cm3/ : 7.0...13.0 1000 s: (5.5...14.5) cm3 : 3.50

Spread

1000 s: (5.50)

Remarks:

APPLICATION

Generator

Note remarks

: MB 6,0 j 1 : 27.05.91 Test sheet Edition : 1.2.91 Replaces Test oil : ISO-4113

Combination no. : 0 400 846 592

Injection pump

Pump designation : PES6A95D41ORS2797 EP type number : 0 410 896 900

Governor

: RQV300...1200AB1065-Governor design.

24L

Governer no. : 0 420 212 228

Customer-spec. information

Customer : MERCEDES-BENZ

: OM 366 Engine

: 92.0 1st version kW : 2400 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30

: (3.15...3.35)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 1200 1st speed

Rack travel in mm : 9.90...10.00

Del.quantity cm3/ : 5.8...6.0

100 s: (5.6...6.2)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 300.0 Rack travel in mm : 8.6...9.0 Del.quantity cm3/: 0.8...1.2

100 s: (0.5...1.4)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed 300 rpm :

travel mm : 0.80...1.30

2nd speed 500 rpm

travel mm 2.30...2.80

: 750 3rd speed rpm

travel mm : 4.10...4.30

1500 4th speed rpm

: 8.50...8.60 travel mm

GUIDE SLEEVE POSITION

Control-Lever position

Degree: -1 rpm : 1450

Speed Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

: 1200 Speed rpm

: 58.5...60.5 Del.quantity 1000 : (56.5...62.5)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 104...112

Testing:

1st rack travel in: 8.90

Speed rpm : 1240...1250

2nd rack travel in: 4.00

rpm : 1360...1390 Speed

4th rack travel in: 1550

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 73...81

Testing:

Speed rpm

Minimum rack trave: 9.60

Speed rpm : 300

Rack travel in mm : 8.60...9.00

CONSTANT REGULATION

rbm : 525...625 Speed

TORQUE CONTROL

Dimension a mm : 0.80

Torque control curve - 1st version

1st speed rpm : 1200

Rack travel in m: 9.90...10.00

2nd speed rpm : 500

Rack travel in m: 10.70...10.90

4th speed rpm : 840

Rack travel in m: 10.20...10.50

START CUT-OUT

1/min : 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

: 500 Speed rpm

Del.quantity cm3/: 44.0...47.0 1000 s: (41.5...49.5)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 8.90

rpm : 1240...1250 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

**L08** 

Del.quantity cm3/: 78.0...88.0 1000 s: (75.0...91.0)

Rack travel in mm : 14.60...15.00

Remarks:

Set shutoff stop to contact at 3.0...3.5 mm control-rod travel.

Note remarks

: KHD 4,1 k 1 : 03.06.91 : 22.3.91 Test sheet Edition Replaces : ISO-4113 Test oil

Combination no. : 0 400 864 088

Injection pump

Pump designation: PES4A85D410/3RS2799

EP type number : 0 410 884 944

Governor

Governor design. : RSV325...1250A2C2253

--2L

: 0 420 232 556 Governer no.

Customer-spec. information : KHD Customer

Engine : BF4L913

1st version kW : 78.0 : 2500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening |

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY Test pressure, bar: 25...27

Prestroke mm : 2.45...2.55

: (2.40...2.60)

Rack travel in mm : 9.00...12.00

: 1-3-4-2 Firing order

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 1250 1st speed

Rack travel in mm : 11.70...11.80

Del.quantity cm3/: 8.4...8.5

100 s: (8.2...8.7)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 325.0 Rack travel in mm : 7.0...7.2 Del.quantity cm3/ : 1.2...1.8

100 s: (1.0...2.0)

cm3 : 0.2Spread 100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 2.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Speed rpm : 1250 Aneroid pressure h: 1000

Del.quantity : 84.0...85.0 1000 : (82.0...87.0)

: 3.00 Spread cm3

1000 : (5.00)

RATED SPEED

1st version Control lever

position degrees: 89...97

Testing:

1st rack travel in: 10.70

rpm : 1290...1300 Speed

2nd rack travel in: 4.00

Speed rpm : 1320...1350

1.09

4th rack travel in: 1480

rpm : 0.30...1.40Speed

LOW IDLE 1 Control lever

position degrees: 58...66

Setting point w/out bumper spring

rpm : 325 Rack travel in mm: 6.0

Testing:

rpm : 100 Speed Minimum rack trave: 19.50

Speed rpm : 325
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00
Speed rpm : 320...380

TORQUE CONTROL

Torque control curve - 1st version

1st speed

t speed rpm : 1250 Rack travel in m: 11.70...11.80

2nd speed rpm : 500 Rack travel in m: 12.10...12.20

rpm : 960 4th speed

Rack travel in m: 11.80...12.00

Aneroid/Altitude Compensator Test

1st version

Settina

rpm : 500 hPa : 1000 Speed rpm Pressure

: 12.10...12.20 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 11.00...11.10

2nd pressure hPa : 300

Rack travel in m: 11.80...11.90

3rd pressure hPa : 230

Rack travel in m: 11.30...11.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 520

Speed rpm : 800 Del.quantity cm3/: 80.0...82.0

1000 s: (77.5...84.5)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/ : 58.0...60.0

1000 s: (56.0...62.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 10.70

Speed rpm : 1290...1300

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 120.0...130.0 1000 s: (117.0...133.0)

Remarks:

APPLICATION

Compressor

Note remarks

: KHD 4,1 k 2 : 27.05.91 Test sheet Edition Replaces : 24.4.91

Test oil : ISO-4113

Combination no. : 0 400 864 089

Injection pump

Pump designation : PES4A85D410/3RS2799

EP type number : 0 410 884 944

Governor

: RSV325...1075A8c2253 Governor design.

-3L

: 0 420 232 547 Governer no.

Customer-spec. information : KHD Customer

Engine : BF4L913

1st version kW : 70.0 : 2150 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.50...2.60 Prestroke mm

: (2.45...2.65)

Rack travel in mm : 9.00...12.00

Firing order : 1-3-4-2

Phasina : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 1075 1st speed

Rack travel in mm : 11.90...12.00

Del.quantity cm3/ : 7.9...8.0

100 s: (7.7...8.2)

cm3 : 0.3Spread

100 s: (0.5)

2nd speed rpm : 325.0Rack travel in mm: 8.2...8.4 Del.quantity cm3/: 1.2...1.8

100 s: (1.0...2.0)

Spread cm3 : 0.2

100 s: (0.4)

GUIDEASLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1075 Speed Aneroid pressure h: 1000

: 79.5...80.5 Del.quantity 1000 : (77.5...82.5)

: 3.00 Spread cm3

1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 95...103

Testing:

1st rack travel in: 10.90

rpm : 1115...1125 Speed

2nd rack travel in: 4.00

Speed rpm : 1150...1180 4th rack travel in: 1315

rom : 0.30...1.70Speed

LOW IDLE 1 Control Lever

position degrees: 64...72 Setting point w/out bumper spring

Speed rpm : 325 Rack travel in mm : 8.3

Testina:

rpm : 100 Speed Minimum rack trave: 19.50
Speed rpm: 325
Rack travel in mm: 8.20...8.40
Rack travel in mm: 2.00

: 350...410 Speed rom

SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm: 1075
Rack travel in m: 11.90...12.00
2nd speed rpm: 500
Rack travel in m: 12.40...12.50
4th speed rpm: 860

Rack travel in m: 12.20...12.40

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rpm hPa : 1000 Pressure

: 12.40...12.50 Rack travel mm

Measurement

1/min : 500 Speed

1st pressure hPa : -

Rack travel in m: 11.40...11.50 2nd pressure hPa : 330 Rack travel in m: 12.00...12.10

3rd pressure hPa : 250

Rack travel in m: 11.70...11.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

Speed rpm : 750 Del.quantity cm3/ : 79.5...81.5 1000 s: (77.0...84.0)

Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 57.0...59.0 1000 s: (55.0...61.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.90

Speed rpm : 1115...1125

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 115.0...125.0

1000 s: (112.0...128.0)

Rack travel in mm : 18.00...18.40

Remarks:

:

Note remarks

: MMM 4,1 b 6 Test sheet Edition : 03.06.91

Replaces

: ISO-4113 Test oil

Combination no. : 0 400 864 092

Injection pump Pump designation : PES4A90D320/3RS2659

: 0 410 894 028 EP type number

Governor

: RSV325...1250A5C2182 Governor design.

-9R

: 0 420 233 287 Governer no.

Customer-spec. information : MWM Customer

: TD226B-4 Engine

: 87.0 1st version kW : 2500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.95...3.05 Prestroke mm

: (2.90...3.10)

Rack travel in mm : 9.00...12.00 : 1-3-4-2 Firing order

Phasing : 0-90-180-270

Tolerance  $+ - \circ : 0.50 (0.75)$ 

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...0.00 & maximum rack tra: 21.00 Difference ° CS : 3.50...4.50

BASIC SETTING

1st speed rpm: 1250

Rack travel in mm : 11.50...11.60

Del.quantity cm3/: 9.1...9.2

100 s: (8.9...9.4)

Spread cm3 : 0.3

100 s: (0.5)

rpm : 325.02nd speed Rack travel in mm : 7.0...7.2

Del.quantity cm3/:0.8...1.4

100 s: (0.6...1.6)

cm3 : 0.2Spread

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250 Aneroid pressure h: 700

Del.quantity : 91.5...92.5 1000 : (89.5...94.5)

: 3.00 cm3 Spread

1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 103...111

Testing:

1st rack travel in: 10.50

rpm : 1290...1300 Speed 2nd rack travel in: 4.00 rom : 1345...1375 Speed 3rd rack travel in: 4.00 Speed rpm : 1355...1385 4th rack travel in: 1520 rpm : 0.30...1.40 Speed LOW IDLE 1 Control Lever position degrees: 68...76 Setting point w/out bumper spring Speed rpm : 325 Rack travel in mm : 5.5 Testing: Speed rpm : 100 Minimum rack trave: 19.50 rpm : 325 Speed Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00 : 445...505 Speed המה TORQUE CONTROL Torque control curve - 1st version rpm : 1250 1st speed Rack travel in m: 11.50...11.60 rpm : 500 2nd speed Rack travel in m: 12.60...12.70 3rd speed rpm : 920 Rack travel in m: 11.90...12.10 Aneroid/Altitude Compensator Test 1st version Setting Speed rpm : 500 hPa : 700 rpm Pressure : 12.60...12.70 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 10.40...10.50 2nd pressure hPa : 185 Rack travel in m: 11.60...11.70 3rd pressure hPa : 90 Rack travel in m: 11.00...11.20 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 rpm : 700

Del.quantity cm3/: 98.5...100.5

1000 s: (96.0...103.0)

Aneroid pressure h: 185
Speed rpm : 500
Del.quantity cm3/: 79.0...81.0
1000 s: (76.5...83.5)
Aneroid pressure h: Speed rpm : 500
Del.quantity cm3/: 61.0...63.0
1000 s: (59.0...65.0)

#### **BREAKAWAY**

Speed

1st version 1mm rack travel less than full load rack tr: 10.50

STARTING FUEL DELIVERY

rpm : 1290...1300

Remarks:

Note remarks

Test sheet : KHD 6,1 w : 27.05.91 Edition : 24.4.91 Replaces Test oil : ISO-4113

: 0 400 866 169 Combination no.

Injection pump

Pump designation : PES6A85D410/3RS2611

EP type number : 0 410 886 902

Governor

: RSV325...1250A2C540-Governor design.

: 0 420 232 565 Governer no.

Customer-spec. information Customer : KHD

Engine : F6L913

: 89.0 1st version kW : 2500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60

: (2.45...2.65)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1250

Rack travel in mm : 10.50...10.60

Del.quantity cm3/: 6.2...6.3

100 s: (6.0...6.5)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 325.0Rack travel in mm: 8.7...8.9 Del.quantity cm3/: 1.2...1.8

100 s: (1.0...2.0)

cm3 : 0.2Spread 100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1250 Speed

Del quantity : 62.5...63.5 1000 : (60.5...65.5)

: 3.00 Spread cm3

1000 : (5.00)

RATED SPEED

1st version Control lever

position degrees: 98...106

Testing:

1st rack travel in: 9.50

rpm : 1290...1300 Speed

2nd rack travel in: 4.00

: 1350...1380 Speed rpm

4th rack travel in: 1525

Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 70...78 Setting point w/out bumper spring rpm Rack travel in mm: 7.0 Testing: Speed : 100 rpm Minimum rack trave: 19.50 : 325 Speed rpm Rack travel in mm : 6.90...7.10 Rack travel in mm : 2.00 rpm : 410...470 Speed SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1250
Rack travel in m: 10.50...10.60
2nd speed rpm : 500
Rack travel in m: 11.10...11.20
4th speed rpm : 1000 Rack travel in m: 10.70...10.90 FUEL DELIVERY CHARACTERISTICS 1st version : 800 Speed rpm Del.quantity cm3/: 54.0...56.0 1000 s: (51.5...58.5) cm3 : 2.50 Spread 1000 s: (4.) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.50 rpm : 1290...1300 Speed STARTING FUEL DELIVERY Remarks: :

Wheel Loader

L16

APPLICATION

Note remarks

Test sheet : VAL 6,6 a 3 Edition : 24.04.91

Replaces

: ISO-4113 Test oil

Combination no. : 0 400 876 3210K

Injection pump

Pump designation : PES6A95D32ORS2684 EP type number : 0 410 896 917

Governor

Governor design. : RSV325...1050A0C2178

-2R

: 0 420 233 178 Governer no.

Customer-spec. information Customer : VALMET

Engine : MF 3690

1st version kW : 140.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_

BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 2.50...2.60 Prestroke mm

: (2.45...2.65)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00

& maximum rack tra: 21.00

Difference ° CS : 4.50...5.50

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.90...12.00

Del.quantity cm3/: 10.9...11.1

100 s: (10.7...11.3)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 500.0 Rack travel in mm : 3.8...4.0

Del.quantity cm3/: 1.1...1.4

100 s: (0.8...1.6)

cm3 : 0.3Spread 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...0.70

Governor spring pre-tension Click setting x : 2.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

: 109.0...111.0 Del.quantity

1000 : (107.0...113.0) : 3.50 Spread cm3

: (6.00) 1000

RATED SPEED

1st version

Control Lever position degrees: 81...14 Testing: 1st rack travel in: 10.90 rpm : 1135...1145 Speed 2nd rack travel in: 4.00 Speed rpm: 1850...1215 3rd rack travel in: 4.00 Speed rpm : 1190...1220 4th rack travel in: 1360 Speed rpm : 0.30...1.40LOW IDLE 1 Control Lever position degrees: 64...72 Setting point w/out bumper spring rrom : 500 Speed Rack travel in mm: 3.4 rpm : 500 Speed Rack travel in mm : 3.80...4.00
Rack travel in mm : 2.00
Speed rpm : 510...570 TORQUE CONTROL Dimension a mm : 0.70 Torque control curve - 1st version 1st speed rpm : 1100 Rack travel in m: 11.90...12.00

2nd speed rpm : 500

Rack travel in m: 11.90...-12.00 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.90 Speed rpm : 1135...1145 STARTING FUEL DELIVERY Speed rpm : 100 Rack travel in mm : 19.50...21.00 Remarks: **APPLICATION** Tractor (tractor engines)

Note remarks

: DAF 6,2 q 2 : 27.05.91 : 28.3.91 Test sheet Edition Replaces

Test oil : ISO-4113

Combination no. : 0 400 876 377

Injection pump

Pump designation : PES6A95D32ORS2693Z

EP type number : 0 410 896 913

Governor

Governor design. : RSV300...1300A0c2248

-1R

: 0 420 233 273 Governer no.

Customer-spec, information Customer : DAF

: NS156 Engine

: 156.0 1st version kW : 2600 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening.

: 172...175 pressure, bar

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_

BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 2.00...2.10 Prestroke mm

: (1.95...2.15)

Rack travel in mm : 7.50...10.50

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50 & maximum rack tra: 21.00

Difference ° CS : 2.50...3.50

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.00...12.10

Del.quantity cm3/: 8.7...8.8

100 s: (8.5...9.0)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 300.0 Rack travel in mm: 6.3...6.5 Del.quantity cm3/: 0.6...1.0

100 s: (0.3...1.2)

cm3 : 0.3Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 3.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 700

Del.quantity : 87.5...88.5 1000 : (85.5...90.5)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control Lever position degrees: 97...103 Testina: 1st rack travel in: 11.00 rpm : 1340...1350 Speed 2nd rack travel in: 4.00 rpm : 1390...1420 Speed 3rd rack travel in: 4.00 rpm : 1410...1440 Speed 4th rack travel in: 1575 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 66...74 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 5.9 Testing: : 100 Speed rpm Minimum rack trave: 19.50 rpm : 300 Speed Rack travel in mm : 6.30...6.50 Rack travel in mm : 2.00 Speed : 580...640 rpm TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1300 Rack travel in m: 12.30...12.40 2nd speed rpm : 500 Rack travel in m: 12.30...12.50 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rpm hPa : 700 Pressure Rack travel mm : 12.00...12.10 Measurement 1/min : 600Speed 1st pressure hPa : -Rack travel in m: 10.30...10.50 2nd pressure hPa : 290
Rack travel in m: 11.50...11.60
3rd pressure hPa : 250 Rack travel in m: 10.70...10.90 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: -

Speed rpm : 600
Del.quantity cm3/ : 53.5...54.5
1000 s: (51.5...56.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.00
Speed rpm : 1340...1350

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.30...6.50
Del. quantity cm3/ : 6.0 ...10.0

Del.quantity cm3/: 6.0...10.0 1000 s: (3.5...12.5) Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

L20

Note remarks

: MB 6.0 c 9 : 27.05.91 Test sheet Edition Replaces : 14.12.90 : ISO-4113 Test oil

Combination no. : 0 400 876 380

Injection pump

Pump designation : PES6A90D410RS2710 EP type number : 0 410 896 082

Governor

: RSV350...1200A1C1163 Governor design.

: 0 420 232 546 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: OM 366 Engine

1st version kW : 74.0 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.25...2.35

: (2.20...2.40)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 1200 1st speed

Rack travel in mm : 9.30...9.40

Del.quantity cm3/ : 5.1...5.2

100 s: (4.9...5.4)

cm3 : 0.3Spread

100 s: (0.4)

2nd speed rpm : 370.0 Rack travel in mm : 7.9...8.5 Del.quantity cm3/ : 1.0...1.2

100 s: (0.8...1.4)

cm3 : 0.2Spread 100 s: (0.4)

GUIDE SLEEVE POSITION Control-Lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

: 51.0...52.0 Del.quantity 1000 : (49.0...54.0)

: 3.00 cm3

Spread 1000 : (4.50)

RATED SPEED

1st version

Control Lever

position degrees: 109...117

Testing:

1st rack travel in: 8.30

rpm : 1240...1245 Speed

2nd rack travel in: 4.00

rpm : 1267...1280 Speed

3rd rack travel in: 4.00

rpm : 1300...1330 Speed 4th rack travel in: 1400 Speed rpm : 0.30...1.40 5th rack travel in: 1255...1265 Speed rpm : 8.30

LOW IDLE 1 Control lever

position degrees: -3

Setting point w/out bumper spring

rpm Rack travel in mm: 8.2

Testing:

Speed rpm : 100 Minimum rack trave: 19.50 : 370 Speed rpm

Rack travel in mm : 8.10...8.30

Rack travel in mm : 2.00

: 460...520 Speed man

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1200

Rack travel in m: 9.30...9.40

2nd speed rpm : 600

Rack travel in m: 10.00...10.20 3rd speed rpm : 900

Rack travel in m: 9.80...10.10

FUEL DELIVERY CHARACTERISTICS

1st version

: 600 Speed rom

Del.quantity cm3/: 41.0...43.0

1000 s: (38.5...45.5)

: 900 Speed rpm

Del.quantity cm3/: 46.0...49.0

1000 s: (43.5...51.5)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 8.30

rpm : 1240...1245 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 85.0...95.0

1000 s: (82.0...98.0)

Rack travel in mm : 16.80...17.20

Speed rpm : 370
Rack travel in mm : 7.90...8.50
Del.quantity cm3/ : 10.0...12.0
1000 s: (8.0...14.0)
Spread cm3 : 2.50

1000 s: (4.50)

Remarks:

Set pneumatic shutoff device to control-rod stop = 0.5...1.5 mm control-rod travel at 4.5 bar atmospheric pressure.

APPLICATION

Unimog

LOW IDLE

L22

Note remarks

Test sheet : MB 6,0 c 11 Edition : 27.05.91 Replaces : 14.12.90 Test oil : ISO-4113

Combination no. : 0 400 876 385

Injection pump

Pump designation : PES6A900410RS2710 EP type number : 0 410 896 082

Governor

Governor design. : RSV350...1400A0C1163

Governer no. : 0 420 232 552

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM 366

1st version kW : 96.0 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening.

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.25...2.35

: (2.20...2.40)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

BASIC SETTING

1st speed rpm: 1400

Rack travel in mm : 10.80...10.90

Del.quantity cm3/: 6.0...6.1

100 s: (5.8...6.3)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 350.0 Rack travel in mm : 8.8...9.4 Del.quantity cm3/ : 1.0...1.4

/ cm3/ : 1.0...1.4 100 s: (0.8...1.6)

Spread cm3 : 0.2 100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 6.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1400

Del.quantity : 60.5...61.5 1000 : (58.5...63.5)

Spread cm3 : 3.00

1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 109...117

Testing:

1st rack travel in: 9.80

Speed rpm : 1435...1440

2nd rack travel in: 4.00

Speed rpm : 1475...1488

3rd rack travel in: 4.00

Speed rpm : 1515...1545 4th rack travel in: 1575 Speed rpm : 0.30...1.40 5th rack travel in: 1440...1450 Speed rpm : 9.80

LOW IDLE 1 Control lever

position degrees: -3

Setting point w/out bumper spring

rpm Rack travel in mm: 9.1

Testing:

Speed rpm : 100 Minimum rack trave: 19.50

Speed rpm : 350
Rack travel in mm : 9.00...9.20
Rack travel in mm : 2.00

: 470...530 Speed rpm

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1400

Rack travel in m: 10.80...10.90

rpm : 500 2nd speed

Rack travel in m: 12.10...12.20

3rd speed rpm : 750

Rack travel in m: 11.80...12.00 4th speed rpm : 950

Rack travel in m: 11.40...11.70

FUEL DELIVERY CHARACTERISTICS

1st version

: 600 Speed rom

Del.quantity cm3/: 52.0...54.0 1000 s: (49.5...56.5)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 9.80

Speed rpm : 1435...1440

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 78.0...88.0

1000 s: (75.0...91.0)

Rack travel in mm : 16.90...17.30

LOW IDLE

Speed rpm : 350

L24

Rack travel in mm : 8.80...9.40 Del.quantity cm3/ : 10.0...14.0 1000 s: (8.0...16.0) Spread cm3 : 2.50

1000 s: (4.50)

Remarks:

Set pneumatic shutoff device to control-rod stop = 0.5...1.5 mm control-rod travel at 4.5 bar atmospheric pressure.

**APPLICATION** 

Unimog

Note remarks

: SSC 14,0 a1 : 27.05.91 Test sheet Edition Replaces : 22.5.87 : ISO-4113 Test oil

Combination no. : 0 401 830 711

Injection pump

Pump designation : PE12P100A520/6RS3103

EP type number : 0 411 800 703

Governor

Governor design. : RQV375...1000PA639-2

: 0 421 813 514 Governer no.

Customer-spec. information Customer : SSCM

Engine : V 12.520 AN

1st version kw : 220.0 : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening.

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 : (2.75...2.95) Prestroke mm

Rack travel in mm : 9.00...12.00 Firing order : 1-8-5-10-3-7-

6-11-2-9-4-12

Phasing : 0-15-60-75-120-135-

180-195-240-255-300-

315

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 11.60...11.70

Del.guantity cm3/: 9.3...9.5

100 s: (9.1...9.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 375.0 Rack travel in mm : 7.6...7.8 Del.quantity cm3/ : 1.0...1.4

100 s: (0.7...1.6) cm3 : 0.3

Spread

100 s: (0.5)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

350 1st speed rpm :

1.10...1.60 travel mm

: 450 2nd speed man

: 3.30...3.70 : 700 travel mm

3rd speed rom

travel mm : 5.20...5.60

: 1000 4th speed rpm

travel mm : 7.60...7.80

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1075 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

: 93.5...95.5 : (91.5...97.5) Del.quantity 1000

: 3.50 Spread cm3

1000 : (6.00)

#### RATED SPEED

1st version Control lever

position degrees: 116...124

Testing:

1st rack travel in: 10.60

rpm : 1040...1050 Speed

2nd rack travel in: 4.00

Speed rpm : 1125...1155 4th rack travel in: 1250 Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever

position degrees: 71...79

Testing:

Speed rpm : 100 Minimum rack trave: 9.20

Speed rpm : 375 Rack travel in mm : 7.60...7.80

CONSTANT REGULATION

rpm : 375...475 Speed

START CUT-OUT

Speed 1/min: 320 (340)

#### **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 10.60

rpm : 1040...1050 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 230.0...250.0

1000 s: (226.0...254.0)

LOW IDLE

Speed rpm : 375
Rack travel in mm : 7.60...7.80 Del.quantity cm3/: 10.0...14.0 1000 s: (7.5...16.5)

cm3 : 3.50 Spread

1000 s: (5.50)

Remarks:

Note remarks

: RVI 9,8 h : 23.11.90 Test sheet Edition Replaces : 5.3.90 Test oil : ISO-4113

: 0 401 846 561 Combination no.

Injection pump

Pump designation : PE6P120A320RS519 : 0 411 826 145 EP type number

Governor

Governor design. : RQ275/1050PA899 : 0 421 801 460 Governer no.

Customer-spec. information Customer : RVI

: MIHS 06.20.45 Engine

: 185.0 1st version kW Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm : 10501st speed

Rack travel in mm : 11.10...11.20

Del.quantity cm3/: 16.4...16.6

100 s: (16.1...16.9)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 275.0 2nd speed Rack travel in mm: 5.5...5.9 Del.quantity cm3/: 1.3...1.9

100 s: (1.0...2.2)

cm3 : 0.8Spread 100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2 rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed Aneroid pressure h: 700

: 164.0...166.0 Del.quantity 1000 : (161.0...169.0)

cm3 : 5.00 1000 : (9.00) Spread

RATED SPEED

1st version

Setting point:

Speed : 600 Rack travel in mm: 20.0

Testing:

1st rack travel in: 10.10

rpm : 1105...1120 Speed 2nd rack travel in: 4.00 : 1205...1235 Speed man 4th rack travel in: 1350 Speed rom : 0.00...1.00LOW ICLE Setting point w/out bumper spring rom Rack travel in mm : 5.4 Testing: Speed : 200 rpm Minimum rack trave: 6.50 : 275 rpm Rack travel in mm : 5.60...5.80 Rack travel in mm : 2.10 Speed rpm : 430...470 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : 700 Pressure Rack travel mm : 11.10...11.20 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 9.70...9.90 2nd pressure hPa : 260 Rack travel in m: 10.60...10.70 3rd pressure hPa : 220 Rack travel in m: 10.00...10.20 START CUT-OUT 1/min: 195 (215) Speed FUEL DELIVERY CHARACTERISTICS 1st version eroid pressure h: 700 ্পক্ত্র ran : 700 Dei.quantity cm3/: 155.0...161.0 1000 s: (152.0...164.0) Aneroid pressure h: -*്*രണ : 58പ് Speed Del.quantity cm3/: 177.0...105.0 1000 s: (100.0...108.0)

1mm rack travel less than full load rack tr: 10.10 Speed rpm : 1105...1120 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 135.0...165.0 1000 s: (131.0...169.0) LOW IDLE : 275 Speed rpm Rack travel in mm : 5.50...5.90 Del.quantity cm3/: 13.0...19.0 1000 s: (10.0...22.0) cm3 : 8.00 Spread 1000 s: (12.00) Remarks: APPLICATION **Omnibus** 

BREAKAWAY

1st version

L28

Note remarks

Test sheet : DAF 11,7 o1 : 27.05.91 Edition : 24.4.91 Replaces Test oil : ISO-4113

Combination no. : 0 401 846 568

Injection pump

Pump designation : PE6P110A320RS529 EP type number : 0 411 816 179

Governor

Governor design. : RQ275/1000PA1012 : 0 421 801 595 Governer no.

Customer-spec. information Customer : DAF

: LT 195 G Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening.

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90 : (2.75...2.95) Rack travel in mm : 14.50...15.50 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 5.20...5.40 & maximum rack tra: 14.7...15.7 Difference ° CS : 2.00...4.00

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 15.70...15.80

Del.quantity cm3/: 19.3...19.5

100 s: (19.0...19.7)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300.0 Rack travel in mm : 7.7...7.9 Del.quantity cm3/ : 2.2...2.7

100 s: (1.9...2.9) Spread cm3 : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2 rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 1000

: 193.0...195.0 1000 : (190.5...197.5) Del.quantity

: 4.00 Spread cm3

1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed rpm Rack travel in mm: 20.0

Testing:

1st rack travel in: 14.20

rpm : 1025...1040 Speed

2nd rack travel in: 4.00

Speed rpm : 1105...1135 4th rack travel in: 1300

Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300 Rack travel in mm : 7.8

Testing:

Speed : 100 rpm Minimum rack trave: 11.20

Speed rpm : 300 Rack travel in mm : 7.70...7.90 Rack travel in mm : 2.00

: 350...390 Speed rpm

TORQUE CONTROL

Dimension a mm : 0.30

Torque control curve - 1st version

: 980 1st speed rpm

Rack travel in m: 15.20...15.40

: 600 2nd speed rpm

Rack travel in m: 16.00...16.30

: 750 3rd speed rpm

Rack travel in m: 15.55...15.75

rpm : 825 4th speed

Rack travel in m: 15.30...15.50

Aneroid/Altitude Compensator Test

1st version

Settina

: 600 Speed rpm hPa : 1000 Pressure

: 15.70...15.80 Rack travel mm

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 13.10...13.30

2nd pressure hPa : 440

Rack travel in m: 15.10...15.20

3rd pressure hPa : 340

Rack travel in m: 13.70...13.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000 Speed : 980 rpm

Del.quantity cm3/: 178.0...182.0 1000 s: (175.0...185.0)

Aneroid pressure h: -

: 600 Speed rom

Del.quantity cm3/: 132.0...134.0 1000 s: (129.5...136.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.20

rpm : 1025...1040 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 290.0...330.0 1000 s: (287.0...333.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm

Rack travel in mm : 7.70...7.90 Del.guaritty cm3/: 22.0...27.0

1000 s: (19.5...29.5)

cm3 : 4.50Spread

1000 s: (7.50)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : ENA 11,9 c : 27.05.91 Test sheet Edition Replaces : 1.12.89 Test oil : ISO-4113 Combination no. : 0 401 846 860 Injection pump Pump designation : PE6P120A320RS3200 EP type number : 0 411 826 766 Governor Governor design. : RQV250...1000PA808-1 : 0 421 813 660 Governer no.

Customer-spec. information Customer : ENASA : 96 R1 BX Engine

1st version kW : 265.0 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

**Opening** 

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00X1.50X1000 x Length ::

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.80...3.90 : (3.75...3.95)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 11.90...12.00

Del.quantity cm3/: 24.9...25.1

100 s: (24.6...25.4)

cm3 : 0.5 Spread

100 s: (0.9)

2nd speed rpm : 250.0 Rack travel in mm : 3.3...3.7 Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6) cm3 : 0.8

Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250 : 1.00...1.40 travel mm 2nd speed rom : 350

travel mm : 2.10...2.60

3rd speed : 700 rpm

travel mm : 4.70...5.30 : 1055 4th speed rpm

: 7.90...8.10 travel mm

: 1145 5th speed rom

: 9.00...9.40 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1070

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rom : 600 Aneroid pressure h: 1200 Del.quantity : 249.0...251.0 1000 : (246.0...254.0)

: 5.00 cm3 Spread

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 115...123

Testing:

1st rack travel in: 10.90 Speed rpm : 1050...1060 2nd rack travel in: 4.00

Speed rpm : 1130...1160 4th rack travel in: 1250

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 73...81

Testing:

rpm : 100 Speed Minimum rack trave: 5.00 rpm

Rack travel in mm : 3.30...3.70

CONSTANT REGULATION

rpm : 250...330 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 rpm Pressure hPa : 1200

: 11.90...12.00 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 8.50...8.90

2nd pressure hPa : 680

Rack travel in m: 11.30...11.40

3rd pressure hPa : 420 Rack travel in m: 9.50...9.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm : 900 Del.quantity cm3/: 244.0...250.0 1000 s: (241.0...253.0)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 149.0...152.0 1000 s: (146.5...154.5)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 10.90 speed rpm : 1050...1060 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 155.0...175.0 1000 s: (151.0...179.0) Rack travel in mm : 19.50...21.00

Remarks:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

Note remarks

Test sheet : MB 14,7 L 5 Edition : 27.05.91

Replaces : -

Test oil : ISO-4113

Combination no. : 0 401 848 816

Injection pump

Pump designation: PE8P110A320LS3846-1

EP type number : 0 411 818 719

Governor

Governor design. : RQ300/1050PA1007

Governer no. : 0 421 801 588

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M442

1st version kW : 195.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow |

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 101

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50

: (4.35...4.55) Rack travel in mm : 9.00...12.00

Firing order : 8-7-2-6-3-5-

4-1

Phasing : 0-45-90-135-180-225-

270-315

Tolerance  $+ - \circ : 0.50 (0.75)$ 

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 11.10...11.20

Del.quantity cm3/: 11.4...11.6

100 s: (11.4...11.6)

Spread cm3:0.8

2nd speed rpm : 300.0 Rack travel in mm : 7.0...7.6 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.4)

Spread cm3 : 0.6 100 s: (1.1)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 650

Rack travel in mm : 13.10...13.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1050

Del.quantity : 114.0...116.0

1000 : (114.0...116.0)

Spread cm3 : 8.50

RATED SPEED

1st version

Setting point:

Speed rpm : 650 Rack travel in mm : 13.5

Testing:

1st rack travel in: 10.10

Speed rpm : 1090...1100 2nd rack travel in: 4.00

Speed rpm : 1170...1200 4th rack travel in: 1300

Speed rpm : 0.00...2.00

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm: 300 Rack travel in mm: 7.3

Testina:

Speed rpm : 200 Minimum rack trave: 9.20 Speed rpm : 300 Rack travel in mm : 7.00...7.60 Rack travel in mm : 2.00

rpm : 400...440 Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600 Del.quantity cm3/: 110.0...116.0 1000 s: (107.0...119.0)

cm3 : 11.00 Spread 1000 s: (14.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.10

Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 130.0...150.0 1000 s: (126.0...154.0)

Remarks:

M06

Note remarks

Test sheet : KHD 16,0 e : 27.05.91 Edition : 24.4.91 Replaces Test oil : ISO-4113

Combination no. : 0 401 849 752

Injection pump

Pump designation : PE10P110A920/5LS3276

: 0 411 819 712 EP type number

Governor

Governor design: : RQV300...1150PA997

: 0 421 813 927 Governer no.

Customer-spec. information Customer : KHD

: F 10L513 Engine

: 223.0 1st version kW : 2300 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

: 172...175 pressure, bar

: 1 680 750 015 Test lines

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.10...3.20 : (3.05...3.25) Rack travel in mm : 9.00...12.00

M07

: 1- 10- 9- 4- 3- 6-5- 8- 7- 2 Firing order

: 0-27-72-99-144-171-216-243-288-315 : 0.50 (0.75) Phasing

Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

rpm: 1150 1st speed

Rack travel in mm : 9.90...10.00

Del.quantity cm3/: 10.8...11.0

100 s: (10.5...11.3)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 350.0 2nd speed Rack travel in mm: 5.4...5.6 Del.quantity cm3/: 1.2...1.7

100 s: (1.0...2.0)

cm3 : 0.4Spread 100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 375

: 2.30...2.70 travel mm 2nd speed 510 rpm travel mm 3.60...4.10

3rd speed : 870 rom

7.40...7.90 travel mm 4th speed 1200

rpm 9.90...10.40 travel mm

1300 5th speed rpm : 10.90...11.30 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 Speed rpm : 1250 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1150 Speed

Del.quantity : 108.0...110.0

1000 : (105.0...113.0)

cm3 : 4.00 1000 : (7.50) Spread RATED SPEED 1st version Control lever position degrees: 44...52 Testing: 1st rack travel in: 8.90 Speed rpm : 1190...1200 2nd rack travel in: 4.00 Speed rpm : 1270...1300 4th rack travel in: 1400 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 15...23 Testing: : 100 Speed rpm Minimum rack trave: 7.10 rpm : 350 Rack travel in mm : 4.40...4.60 CONSTANT REGULATION Speed rpm : 300...420 START CUT-OUT 1/min : 220 (0) Speed FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 700 Del.quantity cm3/ : 100.0...104.0 1000 s: (97.0...107.0) cm3 : 6.00Spread 1000 s: (9.) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 8.90

rpm : 1190...1200

rpm : 100 Del.quantity cm3/: 135.0...165.0 1000 s: (131.0...169.0)

STARTING FUEL DELIVERY

LOW IDLE Speed rpm : 350 Rack travel in mm : 4.40...4.60 Remarks:

**80M** 

Speed

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : DAF 11,6017 : 29.05.91 Edition : 24.4.91 Replaces : ISO-4113 Test oil Combination no. : 0 401 876 295R Injection pump Pump designation : PE6P12OA32ORS415-1R EP type number : 0 411 826 123 Governor Governor design. : RSV250...1000P5A508-: 0 421 833 194 Governer no. : 0763424 Cust. part no. Customer-spec. information Customer : DAF Engine : DKXD 1160 ATi M TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 019 assembly Openina : 207...210 pressure, bar Orifice plate diameter mm : 0,8 Test lines : 1 680 750 067 Outside diameter x Wall thickness x Length mm : 6.00X1.50X1000 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

Prestroke mm : 2.80...2.90 : (2.75...2.95) Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 : 0-60-120-180-240-300 Phasing Tolerance + - ° : 0.50 (0.75) BASIC SETTING rpm: 850 1st speed Rack travel in mm : 11.10...11.20 Del.quantity cm3/: 17.6...17.8 100 s: (17.3...18.1) Spread cm3 : 0.5100 s: (0.9) 2nd speed rpm : 250.0Rack travel in mm: 6.7...6.9 Del.quantity cm3/: 1.4...2.0 100 s: (1.1...2.3) cm3 : 0.8Spread 100 s: (1.2) GUIDE SLEEVE POSITION Control-lever position Degree: -3 rpm : 800 Speed Rack travel in mm : 0.30...0.70 Governor spring pre-tension Click setting x : 4.75FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 850 Aneroid pressure h: 700 Del.quantity : 1/6.0...181.0) cm3 : 5.00 Spread 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: ? Testing: 1st rack travel in: 10.00 Speed rpm : 1035...1045

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

2nd rack travel in: 4.00

rpm : 1115...1145 Speed

3rd rack travel in: 4.00

rpm : 1190...1220 Speed

4th rack travel in: 1350

Speed rpm : 0.30...1.40

LOW IDLE 1 Control lever

position degrees: 19...27

Setting point w/out bumper spring Speed rpm : 250

Rack travel in mm: 6.0

Testing:

rpm : 100 rpm : 250 Speed Speed

Rack travel in mm : 6.40...6.60

Rack travel in mm: 2.00

Speed : 630...690 rom

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 850

Rack travel in m: 11.40...11.50

2nd speed rpm : 400

Rack travel in m: 11.40...11.60

3rd speed rpm : 300

Rack travel in m: 11.70...12.20

Aneroid/Altitude Compensator Test

1st version

Setting

: 600 Speed rpm Pressure hPa : 700

: 11.10...11.20 Rack travel mm

Measurement

Speed  $1/\min : 600$ 

1st pressure hPa : -

Rack travel in m: 10.30...10.50

2nd pressure hPa : 210

Rack travel in m: 10.70...10.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 600 Del.quantity cm3/ : 140.0...142.0

1000 s: (137.0...145.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 10.00

rpm : 1035...1045 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 305.0...345.0 1000 s: (301.0...349.0) Rack travel in mm : 19.50...21.00

LOW IDLE

Speed : 250 rpm

Rack travel in mm : 6.40...6.60

:

Remarks:

M10

## Note remarks

: DAF 11,6t33 : 29.05.91 : 24.4.91 Test sheet Edition Replaces Test oil : ISO-4113

Combination no. : 0 401 876 297Y

Injection pump

Pump designation : PE6P110A320RS385-1Y

EP type number : 0 411 816 146

Governor

Governor design. : RSV250...750P7A507

: 0 421 833 185 Governer no.

: 0290321 Cust. part no.

Customer-spec. information : DAF Customer

: DKTD 1160(1500) Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27

Prestroke mm

: 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 9.00...12.00 Firing order : 1- 5- 3- 6- 2-

: 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

Phasing

1st speed rpm: 700

Rack travel in mm : 11.80...12.00

Del.quantity cm3/: 15.2...15.4

100 s: (14.9...15.6)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 250.0 2nd speed Rack travel in mm: 6.8...7.0 Del.quantity cm3/: 2.5...3.3

100 s: (2.2...3.5)

cm3 : 0.4Spread

100 s: (0.7)

GUIDE SLEEVE FOSITION Control-lever position

Degree: -3 rpm : 800

Speed Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

152.0...154.0 Del.quantity 1000 : (149.5...156.5)

: 4.00 Spread cm3

1000 : (7.50)

RATED SPEED

1st version Control lever

position degrees: 90...98

Testing:

1st rack travel in: 10.80 Speed rpm : 750...755 2nd rack travel in: 4.00

Speed rpm: 780...795 4th rack travel in: 950

rpm : 0.30...1.40 Speed

M11

LOW IDLE 1 Control lever

position degrees: 66...74

Setting point w/out bumper spring

Speed rpm : 250 Rack travel in mm : 6.9 : 250 Speed rpm

Rack travel in mm : 6.80...7.00

Rack travel in mm : 2.00 Speed rpm : 265...325

SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00

# **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 10.80 Speed rpm : 750...755 Speed

#### LOW IDLE

Speed rpm : 250
Rack travel in mm : 6.80...7.00
Del.quantity cm3/ : 25.0...33.0
1000 s: (22.5...35.5)

Spread cm3 : 4.50 1000 s: (7.50)

Remarks:

APPLICATION

Generator

Note remarks

: DAF 11,6023 : 27.05.91 Test sheet Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 401 876 344

Injection pump

Pump designation : PE6P120A320RS415-1Z

EP type number : 0 411 826 136

Governor

Governor design. : RSV250...1100P5A508-

: 0 421 833 298 Governer no.

Customer-spec, information Customer : DAF

Engine : KT 200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasina : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 850

Rack travel in mm : 10.30...10.40

Del.quantity cm3/: 16.0...16.2

100 s: (15.7...16.5)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm: 6.7...6.9 Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.3)

cm3 : 0.8 100 s: (1.2) Spread

GUIDE SLEEVE POSITION

Control-lever position Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850 Aneroid pressure h: 700 Anerona p. ... Del.quantity 1000

: 160.0...162.0 : (157.0...165.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Control Lever

position degrees: 95...103

Testing:

1st rack travel in: 9.30

rpm : 1125...1135 Speed

2nd rack travel in: 4.00

rpm : 1165...1195 Speed

M13

3rd rack travel in: 4.00 Speed rpm : 1200...1230

4th rack travel in: 1375

Speed rpm : 0.30...1.40

LOW IDLE 1 Control lever

position degrees: 66...74
Setting point w/out bumper spring

Speed rpm : 250 Rack travel in mm : 5.6

Testing:

Speed rpm: 100 Speed rpm: 250

Rack travel in mm : 6.00...6.20

Rack travel in mm : 2.00 Speed rpm : 610...710

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 400

Rack travel in m: 10.50...10.70

2nd speed rpm : 300

Rack travel in m: 10.80...11.30

Aneroid/Altitude Compensator Test

1st version Setting

Speed rpm : 600 Pressure hPa : 700

Rack travel mm : 10.30...10.40

Measurement

Speed 1/min: 600

1st pressure hPa : -

Rack travel in m: 9.80...10.00

2nd pressure hPa : 180

Rack travel in m: 10.10...10.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -Speed rpm : 600

Del.quantity cm3/: 131.5...133.5

1000 s: (128.5...136.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.30

M14

Speed rpm : 1125...1135

STARTING FUEL DELIVERY

Speed rpm: 100

Del.quantity\_cm3/ : 310.0...350.0

1000 s: (306.0...354.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm: 250

Rack travel in mm : 6.00...6.20

Remarks:

.

Note remarks

Test sheet : PEN 7,1 c 4 : 27.05.91 Edition : 16.1.91 Replaces Test oil : ISO-4113

Combination no. : 0 401 876 781

Injection pump

Pump designation : PE6P110A320RS3147 EP type number : 0 411 816 743

Governor

Governor design. : RSV650...750P4A421-2

: 0 421 833 336 Governer no.

Customer-spec. information Customer : PENTA

Engine : TD71AG

: 127.0 1st version kW Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60

: (3.45...3.65)

Rack travel in mm : 9.00...12.00

M15

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm: 10.70...10.80

Del.quantity cm3/: 14.0...14.2

100 s: (13.7...14.5)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 650.02nd speed Rack travel in mm: 4.5...4.7

Del.quantity cm3/: 1.7...2.1

100 s: (1.4...2.3)

Spread cm3: 0.6

100 s: (0.9)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 5.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

140.0...142.0 Del.quantity 1000 : (137.0...145.0)

: 4.00 Spread cm3

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 86...94

Testing:

1st rack travel in: 9.70

rpm : 742...747 Speed

2nd rack travel in: 4.00

: 771...784 Speed rpm

4th rack travel in: 940

rpm : 0.30...1.70Speed

LOW IDLE 1 Control lever

position degrees: 81...89 Setting point w/out bumper spring

Speed rpm: 650 Rack travel in mm: 4.6 Speed rpm : 650
Rack travel in mm : 4.50...4.70
Rack travel in mm : 2.00

Speed rpm : 635...695

SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00

#### STARTING FUEL DELIVERY

## LOW IDLE

Speed rpm : 650 Rack travel in mm : 4.50...4.70 Del.quantity cm3/: 17.0...21.0

1000 s: (14.5...23.5)

cm3 : 6.00 Spread

1000 s: (9.00)

Remarks:

#### APPLICATION

Generator set

Note remarks

Test sheet : PEN 12.1 b1 Edition : 27.05.91 Replaces : 16.1.91

Test oil : ISO-4113

Combination no. : 0 401 876 782

Injection pump

Pump designation : PE6P12OA32ORS3189 EP type number : 0 411 826 759

Governor

Governor design. : RSV650...750P4A421-3

Governer no. : 0 421 833 337

Customer spec. information Customer : PENTA

Engine : TD121GG

1st version kW : 199.0 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Opening .

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 2.60...2.70

: (2.55...2.75) Rack travel in mm : 9.00...12.00

Firing order : 1-5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 11.40...11.50

Del.quantity cm3/: 24.1...24.3

100 s: (23.8...24.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 650.0 Rack travel in mm : 3.3...3.5 Del.quantity cm3/ : 2.0...2.4

100 s: (1.7...2.7)

Spread cm3 : 0.5 100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...0.70

Governor spring pre-tension Click setting x : 4.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 700

Del.quantity : 241.0...243.0

1000 : (238.0...246.0) cm3 : 5.00

Spread cm3 : 5.00 1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 92...100

Testing:

1st rack travel in: 10.40

Speed rpm: 750...755 2nd rack travel in: 4.00 Speed rpm: 791...804 4th rack travel in: 950

rpm : 0.30...1.70 Speed

LOW IDLE 1 Control lever

position degrees: 85...93

Setting point w/out bumper spring

Speed rpm : 650 Rack travel in mm : 3.4

Speed rpm : 650
Rack travel in mm : 3.30...3.50
Rack travel in mm : 2.00 Speed rpm : 630...690

SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00

## BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.40 rpm : 750...755 Speed

### STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 480.0...520.0 1000 s: (-)

Rack travel in mm : 20.00...21.00

Remarks:

#### **APPLICATION**

Generator

Note remarks

Test sheet : PEN 12,1 b2 Edition : 27.05.91

Replaces

Test oil : ISO-4113

Combination no. : 0 401 876 784

Injection pump

Pump designation : PE6P120A320RS3189

EP type number : 0 411 826 759

Governor

Governor design. : RSV650...750P4A421-7 Governer no. : 0 421 833 359

Customer-spec. information Customer : PENTA

Engine : TID 71 AG

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening .

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.60...2.70

: (2.55...2,75)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 1

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 8.90...9.00

Del.quantity cm3/: 17.3...17.5

100 s: (17.0...17.8)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 650.0 2nd speed Rack travel in mm : 3.3...3.5 Del.quantity cm3/ : 2.0...2.4

100 s: (1.7...2.7)

cm3 : 0.5Spread

100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 .rpm : 800

Rack travel in mm: 0.30...0.70

Governor spring pre-tension Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

: 173.0...175.0 Del.quantity 1000 : (170.0...178.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 90...98

Testing:

1st rack travel in: 7.90

Speed rpm : 750...755

2nd rack travel in: 4.00

rpm : 772...785 Speed

M19

4th rack travel in: 900 Speed rpm : 0.30...1.40

LOW IDLE 1 Control lever

position degrees: 84...92 Setting point w/out bumper spring

Speed rpm : 650 Rack travel in mm: 3.4

speed rpm : 650
Rack travel in mm : 3.30...3.50
Rack travel in mm : 2.00
Speed Speed rpm : 630...690

SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00

## BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 7.90 rpm : 750...755 Spead

### STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 480.0...520.0 1000 s: (-)

Rack travel in mm : 20.00...21.00

## HIGH IDLE

1st version

Rack travel in mm : 3.80...4.20 Spread cm3 : 5.00

1000 s: (8.00)

:

Remarks:

APPLICATION

Generator set

Note remarks

: MB 14,6 p 5 : 27.05.91 Test sheet Edition : 18.2.91 Replaces Test oil : ISO-4113

: 0 401 878 711 Combination no.

Injection pump

Pump designation: PE8P120A320LS3816-10

EP type number : D 411 828 715

Governor

Governor design. : RSV650...1150P0A823-

: 0 421 833 280 Governer no.

Customer-spec. information

Customer : DAIMLER-BENZ

Engine : 0M422A

1st version kw : 206.0 : 2300 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

: 1 680 750 067 Test lines

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10 : (3.95...4.15)

Rack travel in mm : 9.00...12.00 : 8-7-2-6-3-5-Firing order

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 1180

Rack travel in mm : 9.40...9.50

Del.quantity cm3/: 13.5...13.7

100 s: (13.2...14.0)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 650.0 2nd speed Rack travel in mm : 3.3...3.6 Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.8 Spread 100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1180

Del.quantity : 135.0...137.0

1000 : (132.0...140.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

M21

Control lever

position degrees: 46...54

Testina:

1st rack travel in: 8.40

rpm : 1210...1215 Speed

2nd rack travel in: 4.00

Speed rpm : 1232...1247 4th rack travel in: 1400

Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: 24...32

Setting point w/out bumper spring

rpm : 650 Speed Rack travel in mm : 3.4

Speed rpm : 650
Rack travel in mm : 3.30...3.60
Rack travel in mm : 2.00

Speed rom : 655...695

SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1180

Rack travel in m: 9.40...9.50

2nd speed rpm : 950

Rack travel in m: 10.80...11.10

3rd speed rpm : 1050

Rack travel in m: 10.40...10.60

FUEL DELIVERY CHARACTERISTICS

1st version

Speed LDW

Del. quantity cm3/: 158.0...161.0 1000 s: (155.0...164.0)

cm3 : 8.00 Spread

1000 s: (12.0) Speed rpm : 1075 Del.quantity cm3/ : 148.0...152.0 1000 s: (145.0...155.0)

cm3 : 8.00Spread

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.40

rpm : 1210...1215 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 140.0...160.0 1000 s: (136.0...164.0)

LOW IDLE

rpm : 650 Speed

Rack travel in mm : 3.30...3.60 Del.quantity cm3/: 16.0...22.0

1000 s: (13.0...25.0)

cm3 : 8.00 Spread

1000 s: (12.00)

Remarks:

Engine-speed difference between 1 mm regulated and control-rod travel 4 mm = 25...35 1/min.

When adjusting and checking, adjust speed regulation to 1210...1220 l/min. Afterwards, readjust speed regulation to 1160...1170 L/min.

APPLICATION

Forage harvester

Note remarks

Test sheet : MB 11,7 j Edition : 27.05.91

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 046 825

Injection pump

Pump designation : PES6P110A820LS3282

EP type number : 0 412 016 736

Governor

Governor design. : RQ300/1100PA800-2

: 0 421 801 593 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 06447 h

1st version kW : 157.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

: 1 680 750 015 Test lines

Outside diameter

x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.40...4.50 Prestroke mm

: (4.35...4.55)
Rack travel in mm : 19.00...21.00

: 6-2-4-1-5-3 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 10.90...11.00

Del.quantity cm3/: 13.6...13.8

100 s: (13.3...14.0)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 300.0 Rack travel in mm: 7.2...7.4

Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.3)

cm3 : 0.4 Spread

100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 600 Rack travel in mm : 13.00...14.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

: 136.0...138.0 Del.quantity

1000 : (133.5...140.5)

: 4.00 Spread cm3

1000 : (8.00)

RATED SPEED

1st version

Setting point:

Speed rpm Rack travel in mm: 13.5

Testing:

1st rack travel in: 9.90

rpm : 1140...1150 Speed

M23

2nd rack travel in: 4.00 Speed rpm : 1180...1210 4th rack travel in: 1250 Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300 Rack travel in mm : 7.3

Testing:

rpm : 200 Speed Minimum rack trave: 8.80 Speed rpm : 300
Rack travel in mm : 7.20...7.40
Rack travel in mm : 2.00
Speed rpm : 370...410

FUEL DELIVERY CHARACTERISTICS

1st version

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.90

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 130.0...150.0 1000 s: (126.0...154.0)

:

Remarks:

Note remarks

: MB 11,7 j 1 Test sheet : 27.05.91 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 046 826

Injection pump

Pump designation : PES6P110A820LS3282

EP type number : 0 412 016 736

Governor

Governor design. : RQ300/1100PA786-2

: 0 421 801 576 Governer no.

Customer spec. information

Customer : MERCEDES-BENZ

: 0M447 h Engine

1st version kW : 157.0 : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.40...4.50 Prestroke mm

: (4.35...4.55) Rack travel in mm : 19.00...21.00

: 6-2-4-1-5-3 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 10.90...11.00

Del.quantity cm3/: 13.6...13.8

100 s: (13.3...14.0)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 300.0 Rack travel in mm : 7.2...7.4

Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

cm3 : 0.4Spread

100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 600 Speed

Rack travel in mm : 13.00...14.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

: 136.0...138.0 Del.quantity

1000 : (133.5...140.5)

cm3 : 4.00 Spread

1000 : (8.00)

RATED SPEED

1st version

Setting point:

Speed

Rack travel in mm: 13.5

Testing:

1st rack travel in: 9.90 Speed rpm : 1140...1150

2nd rack travel in: 4.00
Speed rpm : 1180...1210
4th rack travel in: 1250
Speed rpm : 0.00...1.50

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 7.3

Testing:
Speed rpm : 200
Minimum rack trave: 8.80
Speed rpm : 300
Rack travel in mm : 7.20...7.40
Rack travel in mm : 2.00
Speed rpm : 370...410

FUEL DELIVERY CHARACTERISTICS

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 9.90 Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 130.0...150.0 1000 s: (126.0...154.0)

Remarks:

Note remarks

Test sheet Edition

: AIF 23,2 a : 27.05.91

Replaces

Test oil

: ISO-4113

Combination no.

: 0 402 630 806

Injection pump

Pump designation: PE12P130A920/6LS7842

EP type number

: 0 412 630 802

Governor

Governor design. : RQV400...1150PA1(104

Governer no.

: 0 421 813 823

Customer

Customer-spec. information : IVECO-AIFG

Engine

: 82915RN...

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Opening |

pressure, bar

: 207...210

Orifice plate

diameter mm

: 0,8

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 5.00...5.10

: (4.95...5.15)

Rack travel in mm : 9.00...12.00

Firing order

: 1- 4- 9- 8- 5- 2-

11-10-3-6-7-12

Phasing

: 0-15-60-75-120-135-

180-195-240-255-300-

Tolerance + - °

: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed

rpm: 16%

Rack travel in mm : 11.90...12.00

Del.quantity cm3/: 30.3...30.6

100 s: (29.9...30.9)

S.Jreadi

cm3 : 0.6

100 s: (1.0)

rpm : 400.02nd speed

Rack travel in mm: 4.0...4.4

Del.quantity cm3/: 3.5...4.1 100 s: (3.1...4.5)

cm3 : 1.0 Spread

100 s: (1.4)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed

rpm : 400

2.60...3.00 travel mm

: 500 2nd speed man travel mm

4.20...4.80

3rd speed : 650 rpm

travel mm : 5.80...6.40

4th speed

: 900 rpm

: 6.70...7.00 travel mm 5th speed rpm 1350

travel mm

: 11.00...12.00

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 850

Rack travel in mm : 16.50...18.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Speed

rpm : 1150

Aneroid pressure h: 1600

Del.quantity : 303.0...306.0 1000 : (299.5...309.5) : 6.00 Spreak cm3 1000 : (10.00) RATED SPEED 1st version Control lever position degrees: 106...114 Testing: 1st rack travel in: 10.90 rpm : 1190...1200 Speed 2nd rack travel in: 4.00 rpm : 1240...1270 Speed 4th rack travel in: 1350 Speed rpm : 0.00...1.00 LOW IDLE 1 Control lever position degrees: 63...71 Testina: Speed rom Minimum rack trave: 5.70 rpm : 400 Rack travel in mm : 4.10...4.30 CONSTANT REGULATION Speed rpm : 400...550 Aneroid/Altitude Compensator Test 1st version Setting Speed rpm : 500 Pressure hPa : 1600 Rack travel mm : 11.90...12.00 Measurement 1/min : 500 Speed 1st pressure hPa : -Rack travel in m: 6.70...6.90 2nd pressure hPa : 340 Rack travel in m: 8.00...8.10 3rd pressure hPa : 1000 Rack travel in m: 10.50...10.90 FUEL DELIVERY CHARACTERISTICS

Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 184.0...187.0 1000 s: (180.5...190.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.90 rpm : 1190...1200 Speed LOW IDLE Speed rpm : 400 Rack travel in mm : 4.00...4.40 Del.quantity cm3/: 35.0...41.0 1000 s: (31.0...45.0) cm3 : 10.00Spread 1000 s: (14.00) Remarks: Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery **APPLICATION** Navy

1st version

Aneroid pressure h: 1600

Speed rpm: 700 Del.quantity cm3/: 347.0...354.0 1000 s: (343.5...357.5)

Note remarks

: MB 22,0 c 1 : 03.06.91 Test sheet Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 640 827

Injection pump

Pump designation: PE12P120A520LS7826 EP type number : 0 412 620 817

Governor

: RQV350...1000PA870-Governor design.

12

: 0 421 813 933 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM 444 LA

: 550.0 1st version kW

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 150...170

Test nozzle holder

assembly : 1 688 901 019

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50 : (4.35...4.55) Rack travel in mm : 19.00...21.00 Firing order : 12-1-5-9-8-3-4-11-10-2-6-7

Phasing : 0-45-60-105-120-165-

180-225-240-285-300-

: 0.50 (0.75) Tolerance + - °

: 12 Time to cyl. no.

BASIC SETTING

rpm : 10001st speed

Rack travel in mm : 13.00...13.10

Del.quantity cm3/: 24.2...24.4

100 s: (23.9...24.7)

Spread cm3 : 0.6

100 s: (1.0)

rpm : 350.02nd speed Rack travel in mm : 5.3...5.9

Del.guantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

стЗ : 0.8 Spread

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 350 1st speed

1.30...1.80 travel mm

2nd speed 740 rom :

travel mm : 4.80...5.30

3rd speed : 1058 rpm

: 8.30...8.80 travel mm

4th speed : 1260 rpm

travel min : 11.00...12.00

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1125 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Speed rpm : 1000 Aneroid pressure h: 1600 Del.quantity

: 242.0...244.0 1000 : (239.0...247.0)

: 6.00 cm3 Spread 1000 : (10.00)

RATED SPEED

1st version Control lever

position degrees: 116...124

Testing:

1st rack travel in: 12.00 rpm : 1040...1050 Speed

2nd rack travel in: 4.00

rpm : 1140...1170 Speed

4th rack travel in: 1200

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 62...70

Testina:

: 250 Speed rpm Minimum rack trave: 7.30 rpm : 350

Rack travel in mm : 5.30...5.90

CONSTANT REGULATION

rpm : 350...600 Speed

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rpm Pressure hPa : -

: 8.20...8.50 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : 400

Rack travel in m: 9.40...9.60

2nd pressure hPa : 700

Rack travel in m: 11.00...11.20

START CUT-OUT

1/min: 310 (330) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1600 rpm : 750 Speed

Del.quantity cm3/: 233.0...238.0 1000 s: (230.0...241.0)

Spread cm3 : 10.00

1000 s: (15.0)

Aneroid pressure h: -

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 12.00

Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 330.0...350.0

1000 s: (326.0...354.0)

Remarks:

#### Note remarks

: MB 22,0 c 2 : 03.06.91 Test sheet Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 640 828

Injection pump

Pump designation : PE12P12OA520LS7826

: 0 412 620 817 EP type number

Governor

Governor design. : RQV350...1050PA870-

: 0 421 813 934 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

Engine : OM 444 LA

1st version kW : 620.0 Rated speed : 2100

### TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 150...170

Test nozzle holder

: 1 688 901 019 assembly

**Opening** 

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50 : (4.35...4.55)

Rack travel in mm : 19.00...21.00

Firing order : 12- 1- 5- 9- 8- 3-

4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-

180-225-240-285-300-

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 12

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 14.30...14.40

Del.quantity cm3/: 28.0...28.2

100 s: (27.7...28.5)

Spread cm3 : 0.6

100 s: (1.0)

rpm : 350.02nd speed Rack travel in mm: 5.3...5.9 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.8100 s: (1.2)

# (B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350

travel mm : 1.30...1.80

2nd speed 570 rpm

3.30...3.80 travel mm

900 3rd speed rom

5.40...5.90 travel mm

1107 4th speed rom

: 7.80...8.30 : 1204 travel mm

5th speed rom

: 9.80...10.30 travel mm

## GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rom : 1175 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed Aneroid pressure h: 1800

: 280.0...282.0 Del.quantity

1000 : (277.0...285.0)

cm3: 6.00 Spread 1000 : (10.00)

RATED SPEED

1st version Control lever

position degrees: 114...122

Testing:

1st rack travel in: 13.30

rpm : 1090...1100 Speed

2nd rack travel in: 4.00

Speed rpm : 1170...1200

4th rack travel in: 1250 Speed rpm: 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 59...67

Testing:

Speed rpm Minimum rack trave: 7.30 : 350 Speed rom

Rack travel in mm : 5.30...5.90

CONSTANT REGULATION 7

rpm : 350...600 Speed

Aneroid/Altitude Compensator Test

1st version Settina

Speed

. 500 rpm Pressure hPa :

: 8.20...8.50 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : 300

Rack travel in m: 9.60...9.70

2nd pressure hPa : 1100

Rack travel in m: 13.80...14.10

START CUT-OUT

1/min: 310 (330) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1800 Speed rpm

Del.quantity cm3/: 278.0...282.0 1000 s: (275.0...285.0)

cm3 : 10.00 Spread 1000 s: (15.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 124.0...126.0 1000 s: (121.0...129.0)

cm3 : 10.00Spread

1000 s: (15.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 13.30

Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 330.0...350.0 1000 s: (326.0...354.0)

:

Remarks:

NO4

Note remarks

Test sheet : MB 22,0 c 3 Edition : 03.06.91

Replaces

Test oil : ISO-4113

: 0 402 640 829 Combination no.

Injection pump

Pump designation : PE12P120A520LS7826

EP type number : 0 412 620 817

Governor

Governor design. : RQV350...900PA870-14

: 0 421 813 935 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM 444 LA

: 500.0 1st version kW Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 150...170

Test nozzle holder

: 1 688 901 019 assembly

Opening.

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.40...4.50 Prestroke mm

: (4.35...4.55) Rack travel in mm : 19.00...21.00

: 12- 1- 5- 9- 8- 3-4- 11- 10- 2- 6- 7 Firing order

: 0-45-60-105-120-165-180-225-240-285-300-Phasing

345

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 12.90...13.00

Del.quantity cm3/: 23.6...23.8

100 s: (23.3...24.1)

cm3 : 0.6Spread

100 s: (1.0)

rpm : 350.02nd speed

Rack travel in mm: 5.3...5.9 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump with governor

Spread

GUIDE SLEEVE TRAVEL rpm : 350 1st speed

: 1.30...1.80 travel mm

: 655 2nd speed rpm

: 4.80...5.30 travel mm

3rd speed 960 rpm

8.70...9.20 travel mm

4th speed : 1120 rom

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1025 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Speed Aneroid pressure h: 1600 Del.quantity

rpm : 900

: 236.0...238.0 1000 : (233.0...241.0)

cm3 Spread : 6.00 1000 : (10.00)

RATED SPEED

1st version Control lever

position degrees: 118...126

Testing:

1st rack travel in: 11.90 rpm : 940...950 Speed 2nd rack travel in: 4.00

rpm : 1010...1040 Speed

4th rack travel in: 1350

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 62...70

Testing:

Speed man Minimum rack trave: 7.30 Speed rpm

Rack travel in mm : 5.30...5.90

CONSTANT REGULATION

rpm : 350...600 Speed

Aneroid/Altitude Compensator Test

1st version Setting

Speed rpm : 500 hPa : -Pressure

Rack travel mm : 8.20...8.50

Measurement

1/min: 500 Speed

1st pressure hPa : 400

Rack travel in m: 9.40...9.60 2nd pressure hPa : 700

Rack travel in m: 11.00...11.20

START CUT-OUT

Speed 1/min : 310 (330)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1600 Speed : 750

rom Del.quantity cm3/: 228.0...232.0

1000 s: (225.0...235.0)

: 10.00 cm3 Spread 1000 s: (15.0)

Aneroid pressure h:

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 11.90 Speed rpm : 940...950

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 330.0...350.0 1000 s: (326.0...354.0)

Remarks:

N06

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MAN 21,0 b3 : 27.05.91 Edition Replaces : ISO-4113 Test oil Combination no. : 0 402 640 830 Injection pump Pump designation : PE12P120A520LS7824-2 EP type number : 0 412 620 816 Governor Governor design. : RQV300...1150PA902-4 : 0 421 813 870 Governer no. Customer-spec. information Customer : MAN Engine : D2842LYE 1st version kW : 735.0 : 2300 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 019 assembly Opening : 207...210 pressure, bar Orifice plate diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27 Prestroke mm : 4.50...4.60 : (4.45...4.65) Rack travel in mm : 9.00...12.00 Firing order : 12- 1- 5- 9- 8- 3-4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-180-225-240-285-300-

Phasing : 345

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 13.60...13.70

Del.quantity cm3/ : 30.1...30.3

100 s: (29.8...30.6)

Spread cm3 : 0.5 100 s: (0.9)

2nd speed rpm : 500
Rack travel in mm : 9.1...9.3
Del.quantity cm3/ : 14.9...15.1

100 s: (14.6...15.4) Spread cm3 : 0.8 100 s: (1.2)

3rd speed rpm : 300 Rack travel in mm : 7.20...7.40 Del.quantity cm3/ : 5.2...6.0 \*

100 s: (-)
Spread cm3 : 100 s: (-)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL 1st speed rom : : 1.20...1.60 travel mm 2nd speed rpm : 450 : 2.90...3.50 rpm : 750 travel mm 3rd speed : 5.60...6.00 travel mm 4th speed rpm : 1150 : 9.50...9.70 travel mm rpm : 1400 5th speed travel mm : 13.00...14.00

GUIDE SLEEVE POSITION Control-lever position Degree: -1

rpm : 1200 Rack travel in mm : 15.20...17.80 1/min: 220 (240) Speed FULL LOAD DELIV. AT FULL LOAD STOP FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 1150 1st version Aneroid pressure h: 1300 Aneroid pressure h: -: 301.0...303.0 Del.quantity 1000 : (298.0...306.0) : 5.00 Spread cm3 1000 : (9.00) 1000 s: (12.0) RATED SPEED 1st version **BREAKAWAY** Control lever 1st version position degrees: 118...126 1mm rack travel less than Testing: 1st rack travel in: 12.60 full load rack tr: 12.60 rpm : 1190...1200 rpm : 1190...1200 Speed Speed 2nd rack travel in: 4.00 rpm : 1290...1320 Speed STARTING FUEL DELIVERY 4th rack travel in: 1400 Speed rom : 0.00...1.00 : 100 Speed rpm Del.quantity cm3/: 100.0...120.0 \* 1000 s: (-) LOW IDLE 1 Control lever position degrees: 79...87 Speed rpm : 100 Del.quantity cm3/: - \*\* 1000 s: (-) Testing: Speed : 100 rom Rack travel in mm : 17.5...21.0 Minimum rack trave: 8.90 Speed rpm : 300
Rack travel in mm : 7.30...7.50
Rack travel in mm : 2.00 HIGH IDLE : 470...530 Speed rom 1st version Aneroid pressure h: rpm : 500 Aneroid/Altitude Compensator Test Rack travel in mm: <7.00 Del.quantity cm3/: - \*\* 1000 s: (-) 1st version Setting 2nd version Speed : 500 Aneroid pressure h: rpm Pressure hPa : 1300 rpm : 500 : 13.60...13.70 Rack travel in mm: < 7.50 Rack travel mm Del.quantity cm3/: < 50.0 1000 s: (-) Measurement 1/min: 500 Speed 3rd version 1st pressure hPa : -Aneroid pressure h: -Speed rpm : 500 Rack travel in mm : 8.40...8.60 Rack travel in n.: 9.10...9.30 2nd pressure hPa : 100 Del.quantity cm3/: 125.0...200.0 1000 s: (-) Rack travel in m: 9.50...9.60 3rd pressure hPa : 470 Rack travel in m: 12.40...12.80 LOW IDLE

NC8

START CUT-OUT

Speed rpm : 300 Rack travel in mm : 7.20...7.40 Del.quantity cm3/ : 52.0...60.0 \* 1000 s: (-)

Remarks:

: MAN-NR. 2-7960

\* applies to cylinders 4, 5, 6, 8 ,10 and 12

\*\* applies for cylinders 1, 2, 3, 7, 9 and 11

APPLICATION

Ship

Note remarks

Test sheet : MB 11,0 t : 27.05.91 Edition Replaces : 26.4.91 Test oil : ISO-4113

Combination no. : 0 402 646 838

Injection pump

Pump designation : PE6P120A320LS7808 EP type number : 0 412 626 816

Governor

Governor design. : RQ300/1050PA762-4 : 0 421 801 390 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

: 0M441 LA Engine

1st version kW : 240.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

**Opening** 

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm : (5.15...5.35)

Rack travel in mm : 20.00...21.00

Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 6

BASIC SETTING

rpm: 600 1st speed

Rack travel in mm: 13.90...14.10

Del.quantity cm3/: 21.4...21.6

100 s: (21.1...21.9)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.0 2nd speed Rack travel in mm : 5.6...6.2 Del.quantity cm3/ : 1.3...1.9

100 s: (1.0...2.2)

cm3 : 0.6 Spread 100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 600 Speed Aneroid pressure h: 900

: 214.0...216.0 Del.guantity 1000 : (211.0...219.0)

: 5.00 cm3 Spread

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed : 600 rpm Rack travel in mm: 20.0

N10

Testing: 1st rack travel in: 13.80 Speed rpm : 1095...1110 2nd rack travel in: 4.00 Speed rpm : 1155...1185 4th rack travel in: 1300 Speed rpm : 0.00...1.50Speed LOW IDLE 1 Setting point w/out bumper spring : 300 Speed rom Rack travel in mm: 5.9 Testing: Speed rpm Minimum rack trave: 7.90 Speed rpm : 300
Rack travel in mm : 5.60...6.20
Rack travel in mm : 2.00
Speed rpm : 380...420 TORQUE CONTROL Dimension a mm : 0.30 rpm : 1050 2nd speed Rack travel in m: 14.80...15.00 rpm : 800 3rd speed Rack travel in m: 15.00...15.20 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rom hPa : 900 Pressure : 13.90...14.10 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : 300 Rack travel in m: 10.70...10.90 2nd pressure hPa : 550 Rack travel in m: 12.90...13.10 3rd pressure hPa : 1050 Rack travel in m: 14.00...14.10 \* 4th pressure hPa : 1150 Rack travel in m: 14.40...14.60 5th pressure hPa : -Rack travel in m: 9.50...9.80 START CUT-OUT 1/min : 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 1450 Speed rpm : 1050
Del.quantity cm3/: 231.0...234.0
1000 s: (228.0...237.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: 1450 Speed rpm : 800 Del.quantity cm3/ : 237.0...241.0 1000 s: (234.0...244.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm Del.quantity cm3/: 142.0...144.0 1000 s: (139.0...147.0) cm3 : 8.00 Spread 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 13.80 rpm : 1095...1110 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 200.0...220.0 1000 s: (196.0...224.0)

Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

Note remarks

Test sheet : MB 11,0 t 2 Edition : 27.05.91 Replaces : 26.4.91 Test oil : ISO-4113

Combination no. : 0 402 646 843

Injection pump

Pumo designation : PE6P120A320LS7808 : 0 412 626 816 EP type number

Governor

Governor design. : RQV300...1050PA797-2

: 0 421 813 614 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M441 LA

: 240.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening 1

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 20.00...21.00 Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 13.90...14.10

Del.quantity cm3/ : 21.4...21.6

100 s: (21.1...21.9)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.02nd speed Rack travel in mm : 5.6...6.2

Del.quantity cm3/: 1.3...1.9

100 s: (1.0...2.2)

Spread cm3 : 0.6100 s: (1.0)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

travel mm : 1.20...1.40

2nd speed rpm : 600

: 4.90...5.10 travel mm

: 1075 3rd speed man

: 7.40...7.60 travel mm

: 1100 4th speed rpm

travel mm : 8.00...8.40

: 1150 5th speed rem

: 9.00...9.40 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1125 Speed

Rack travel in mm : 15.80...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version 3rd pressure hPa : 1050 Rack travel in m: 14.00...14.10 \* rpm : 600 Speed 4th pressure hPa : 1150 Rack travel in m: 14.40...14.60 Aneroid pressure h: 900 : 214.0...216.0 Del.quantity 1000 : (211.0...219.0) 5th pressure hPa : -: 5.00 Rack travel in m: 9.50...9.80 cm3 Spread 1000 : (9.00) START CUT-OUT RATED SPEED 1/min : 220 (240) Speed 1st version Control Lever FUEL DELIVERY CHARACTERISTICS position degrees: 121...129 Testing: 1st version 1st rack travel in: 13.80 Aneroid pressure h: 1450 Speed rpm : 1095...1110 : 1050 Speed rpm Del.quantity cm3/: 231.0...234.0 1000 s: (228.0...237.0) 2nd rack travel in: 4.00 rpm : 1170...1200 Speed 4th rack travel in: 1300 Spread cm3 : 8.001000 s: (12.0) Speed rpm : 0.00...1.00Aneroid pressure h: 1450 LOW IDLE 1 : 800 Speed rpm Del.quantity cm3/: 237.0...241.0 1000 s: (234.0...244.0) Spread cm3 : 8.00 Control lever position degrees: 81...89 Testing: 1000 s: (12.0) Speed Aneroid pressure h: nom Speed rpm : 500 Del.quantity cm3/ : 142.0...144.0 1000 s: (139.0...147.0) Minimum rack trave: 7.90 Speed rpm : 300 Rack travel in mm : 5.60...6.20 cm3 : 8.00 Spread 1000 s: (12.0) CONSTANT REGULATION Speed rpm : 300...450 TORQUE CONTROL **BREAKAWAY** Dimension a mm : 0.30 rpm : 1050 2nd speed 1st version Rack travel in m: 14.80...15.00 1mm rack travel less than rpm : 800 3rd speed Rack travel in m: 15.00...15.20 full load rack tr: 13.80 : 700 4th speed rom Speed rpm : 1095...1110 Aneroid/Altitude STARTING FUEL DELIVERY Compensator Test 1st version Setting : 600 Speed man hPa : 900 Pressure Remarks: : 13.90...14.10 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : 300 Rack travel in m: 13.70...13.90 2nd pressure hPa : 550

Speed rpm : 100 Del.quantity cm3/ : 200.0...220.0 1000 s: (196.0...224.0) \* Increase in control-rod travel with respect to setting at least 0.1 mm

Rack travel in m: 12.90...13.10

Note remarks

Test sheet : SCA 11.1 m : 27.05.91 Edition Replaces : 16.11.90 Test oil : ISO-4113

Combination no. : 0 402 646 872

Injection pump

Pump designation : PE6P120A720RS7126Z

EP type number : 0 412 626 830

Governor

Governor design. : RQV200...1000PA725-6

Governer no. : 0 421 813 755

Customer—spec. information : SAAB-SCANIA Customer

Engine : DSC11 08

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm : (4.95...5.15)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 12.80...12.90

Del.quantity cm3/: 20.4...20.6

100 s: (20.1...20.9)

cm3 : 0.6 Spread

100 s: (0.9)

rpm : 225.0 2nd speed Rack travel in mm: 4.7...5.1

Del.quantity cm3/: 1.8...2.2

100 s: (-) Spread cm3 : 0.3

100 s: (0.6)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 225 1st speed

1.20...1.60 travel mm

350 2nd speed **CDM** 

2.40...3.00 travel mm 3rd speed 650 rpm

travel mm

4.40...5.00

4th speed 1045 rpm

: 8.40...8.60 travel mm

: 1150 5th speed man

: 9.70...10.10 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1170

Rack travel in mm : 6.00...12.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700 Aneroid pressure h: 900

Del.quantity : 204.0...209.0)

**M14** 

cm3 : 6.00 1000 : (9.00) Spread

RATED SPEED

1st version Control Lever

position degrees: 113...121

Testina:

1st rack travel in: 11.80 Speed rpm : 1040...1050 2nd rack travel in: 4.00

Speed rpm : 1140...1170 4th rack travel in: 1300

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 61...69

Testina:

Speed rpm Minimum rack trave: 6.30

rpm : 225 Speed

Rack travel in mm : 4.70...4.90

Rack travel in mm : 2.00 : 350...410 Speed rpm

Aneroid/Altitude

Compensator Test

1st version

Settina

Speed rpm : 500 Pressure hPa : 900

: 12.80...12.90 Rack travel mm

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -Rack travel in m: 10.30...10.70

2nd pressure hPa : 470 Rack travel in m: 12.40...12.50

3rd pressure hPa : 320 Rack travel in m: 11.40...11.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 Speed rpm : 1000

Del.quantity cm3/: 197.0...205.0 1000 s: (195.0...207.0)

Aneroid pressure h: -Speed : 500 rpm

Del.quantity cm3/: 142.0...146.0

1000 s: (140.0...148.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.80

rpm : 1040...1050 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 125.0...155.0

1000 s: (-)

Rack travel in mm : 10.30...10.70

LCW IDLE

rpm : 225

Rack travel in mm : 4.70...4.90

Remarks:

Delivery-valve spring pre-tension 3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders

to 2.9...3.1 mm.

ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO diaphragm.

For comb. with letter index see

VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania

on November 14, 1989

Start of delivery - engine: 9° before

Firing sequence of engine:

1-5-3-6-2-4.

Note remarks

Test sheet : SCA 11.1 r : 27.05.91 Edition

Replaces Test oil : ISO-4113

Combination no. : 0 402 646 887

Injection pump

Pump designation : PE6P120A720RS7188 EP type number : 0 412 626 832

Governor

Governor design. : RQV2CO...950PA725-7

: 0 421 813 803 Governer no.

Customer-spec. information Customer : SCANIA

: DSC 11 23 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 104

Opening

pressure, bar : 250...253

Orifice plate

diameter mm : 0.7

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.40...4.50 Prestroke mm : (4.35...4.55)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 13.80...13.90

Del.quantity cm3/: 25.1...25.3

100 s: (24.8...25.6)

cm3 : 0.7Spread

100 s: (1.0)

rpm : 225.0 2nd speed Rack travel in mm: 4.6...5.0

Del.quantity cm3/: 1.5...1.9

100 s: (-) cm3 : 0.5 Spread 100 s: (0.8)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 225

: 1.20...1.60 travel mm rpm : 350 2nd speed

: 2.40...3.00 travel mm

3rd speed rpm : 650

: 4.50...5.10 travel mm 4th speed rpm : 1045

travel mm : 8.40...8.60

5th speed : 1125 rpm

travel mm : 9.30...9.70

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1150 Rack travel in mm : 7.00...12.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1500

Del.quantity : 251.0...256.0)

N16

cm3 : 7.00 1000 : (10.00) Spread

### RATED SPEED

1st version Control lever

position degrees: 110...118

Testing:

1st rack travel in: 12.80 rpm : 990...1000 Speed 2nd rack travel in: 4.00

Speed rpm: 1110...1140 4th rack travel in: 1250

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 60...68

Testing:

Speed : 100 rom Minimum rack trave: 6.20 : 225 Speed rom

Rack travel in mm : 4.60...4.80

Rack travel in mm : 2.00 : 350...410 Speed COM

Aneroid/Altitude Compensator Test

1st version Setting

rpm : 500 hPa : 1500 Speed rpm Pressure

: 13.80...13.90 Rack travel mm

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 10.20...10.60

2nd pressure hPa : 440

Rack travel in m: 12.00...12.10

3rd pressure hPa : 270

Rack travel in m: 10.90...11.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500

Speed rpm : 950
Del.quantity cm3/: 232.0...240.0
1000 s: (230.0...242.0)

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 151.0...155.0 1000 s: (149.0...157.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 12.80

rpm : 990...1000 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 150.0...180.0

1000 s: (-)

Rack travel in mm : 10.20...10.60

LOW IDLE

Speed rpm : 225 Rack travel in mm : 4.60...4.80

Remarks:

Delivery-valve spring pre-tension 3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.

Start-of-delivery setting with ROBO diaphragm.

APPLICATION

Navy

Note remarks

Test sheet Edition : MB 9,6 q : 03.06.91 : 3.5.91 Replaces : ISO-4113 Test oil

: 0 402 646 915 Combination no.

Injection pump

Pump designation : PE6P120A320LS7836 EP type number : 0 412 626 840

Governor

Governor design. : RQ300/1050PA972 : 0 421 801 542 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M401 LA Engine

1st version kW : 200.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm : 8.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60 : (5.45...5.65) Rack travel in mm : 20.00...21.00 Firing order : 6-3-5-2-4-1

: 0-60-120-180-240-300 Phasing

Tolerance  $+ - \circ : 0.50 (0.75)$ 

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 12.40...12.60

Del.quantity cm3/: 18.2...18.4

100 s: (17.9...18.7)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 5.5...5.8
Del.quantity cm3/ : 1.6...2.2
100 s: (1.3...2.5)
Spread cm3 : 0.6
100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

Speed rpm: 600 Rack travel in mm: 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 800

: 182.0...184.0 Del.quantity

Spread

1000 : (179.0...187.0) cm3 : 5.00 1000 : (9.00)

RATED SPEED

1st version

Setting point: rpm Rack travel in mm : 20.0

M18

Testina: 1st rack travel in: 12.10 rpm : 1090...1105 Speed 2nd rack travel in: 4.00 Speed rpm : 1165...1195 4th rack travel in: 1300 rpm : 0.00...1.50Speed LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Speed Rack travel in mm: 5.6 Testing: Speed **Libin** Minimum rack trave: 7.50 Speed rpm : 300 Rack travel in mm : 5.50...5.80 Rack travel in mm : 2.00 : 380...420 Speed rpm Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rpm Pressure hPa : 800 Rack travel mm : 12.40...12.60 Measurement 1/min: 600 Speed 1st pressure hPa : 350 Rack travel in m: 10.20...10.40 2nd pressure hPa : 500 Rack travel in m: 11.60...11.80 3rd pressure hPa : 1000 Rack travel in m: 12.60...12.80 4th pressure hPa : 1150 Rack travel in m: 12.90...13.10 5th pressure hPa : -Rack travel in m: 9.50...9.80 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1400 rom : 1050 Del.quantity cm3/: 201.0...204.0 1000 s: (198.0...207.0) cm3 : 8.00Soread 1000 s: (12.0) Aneroid pressure h: 1400 rpm : 800 Speed

Del.quantity cm3/: 202.0...206.0 1000 s: (199.0...209.0)

cm3 : 8.00 1000 s: (12.0) Spread Aneroid pressure h: -1000 s: (12.0)

rpm : 1090...1105

### **BREAKAWAY**

1st version 1mm rack travel less than full load rack tr: 12.10 Speed

Remarks:

N19

Note remarks

: MB 9,6 o 2 : 27.05.91 : 22.3.91 Test sheet Edition Replaces Test oil : ISO-4113

: 0 402 646 922 Combination no.

Injection pump

Pump designation : PE6P120A320LS7834 EP type number : 0 412 626 841

Governor

Governor design. : RQ300/1050PA972-2 Governer no. : 0 421 801 556

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M401 LA

: 213.0 1st version kW Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Openina .

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.50...5.60 Prestroke mm

: (5.45...5.65)

Rack travel in mm : 20.00...21.00

: 6-3-5-2-4-1 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

rpm: 600 1st speed

Rack travel in mm : 13.70...13.90

Del.quantity cm3/: 21.9...21.1

100 s: (21.6...21.4)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.4...7.0 Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

Spread cm3 : 0.6100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2 rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 600 Speed Aneroid pressure h: 800

: 219.0...211.0 Del.quantity 1000 : (216.0...214.0)

: 5.00 cm3

1000 : (9.00)

RATED SPEED

1st version

Spread

Setting point: Speed rpm : 600 Rack travel in mm : 20.0 Speed

N20

Testina:

1st rack travel in: 13.10

rpm : 1090...1105 Speed

2nd rack travel in: 4.00

rpm : 1175...1205 Speed

4th rack travel in: 1300

Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

rpm Rack travel in mm: 6.7

Testing:

Speed : 200 rpm Minimum rack trave: 8.50

: 300 Speed rpm

Rack travel in mm : 6.40...7.00

Rack travel in mm: 2.00

: 380...420 Speed rom

TORQUE CONTROL

Dimension a mm

: 1050 2nd speed rpm

Rack travel in m: 14.10...14.30

: 800 3rd speed rpm

Rack travel in m: 14.30...14.50

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 600 COM Pressure hPa : 800

: 13.70...13.90 Rack travel mm

Measurement

1/min: 600 Speed

1st pressure hPa : 250 Rack travel in m: 9.90...10.10

2nd pressure hPa : 550

Rack travel in m: 12.50...12.70

3rd pressure hPa : 1100

Rack travel in m: 13.80...14.00 \*

4th pressure hPa : 1250

Rack travel in m: 14.10...14.30

5th pressure hPa : -

Rack travel in m: 9.20...9.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500 Speed : 1050 rpm

Del.quantity cm3/: 216.0...219.0

1000 s: (213.0...222.0)

Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: 1500

Speed : 800 rpm

Del.quantity cm3/: 219.0...223.0

1000 s: (216.0...226.0)

cm3 : 8.00Spread 1000 s: (12.0)

Aneroid pressure h: -

Speed rpm

Del.quantity cm3/: 122.0...124.0 1000 s: (119.0...127.0)

Spread cm3 : 8.00

1000 s: (12.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 13.10

rpm : 1090...1105 Speed

Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

Note remarks

: UNI 13, 8 h : 27.05.91 : 22.3.91 Test sheet Edition Replaces

Test oil : ISO-4113

Combination no. : 0 402 646 923

Injection pump

Pump designation : PE6P130A720RS7225

EP type number : 0 412 636 817

Governor

Governor design. : RQV300...900PA946

: 0 421 813 845 Governer no.

Customer-spec. information Customer : IVECO-UNIC

: 8210.42.061 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 105

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm : (4.95...5.15)

Rack travel in mm : 11.50...12.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 1

BASIC SETTING

rpm: 900 1st speed

Rack travel in mm : 11.60...11.70

Del.guantity cm3/: 27.0...27.3

100 s: (26.6...27.6)

Spread cm3 : 0.6

100 s: (1.0)

rpm : 300.0 2nd speed

Rack travel in mm : 3.4...3.8 Del.quantity cm3/: 1.9...2.5 100 s: (1.5...2.9)

cm3 : 1.0Spread

100 s: (1.4)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 945

: 8.40...8.60 travel mm rpm : 300 2nd speed

travel mm : 1.00...1.40

rpm : 500 3rd speed : 3.30...3.90 rpm : 700 travel mm

4th speed

travel mm : 5.50...5.90

rpm : 1200 5th speed

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 935

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900 Aneroid pressure h: 900

Del.quantity : 270.0...276.5)

N22

cm3 : 6.00 1000 : (10.00) Spread

RATED SPEED

1st version Control lever

position degrees: 72...80

Testina:

1st rack travel in: 10.60 rpm : 940...950 Speed 2nd rack travel in: 4.00

Speed rpm : 1010...1040 4th rack travel in: 1200

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 76...84

Testing:

Speed : 100 rpm Minimum rack trave: 5.10 Speed rpm : 300 Rack travel in mm : 3.50...3.70

CONSTANT REGULATION

rpm : 320...440 Speed

Aneroid/Altitude Compensator Test

1st version Setting

Speed rpm : 500 Pressure hPa : 900 Rack travel mm : 11.60...11.70

Measurement

1/min : 500Speed

1st pressure hPa : -

Rack travel in m: 8.90...9.10

2nd pressure hPa : 350 Rack travel in m: 11.00...11.10 3rd pressure hPa : 285

Rack travel in m: 9.50...9.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm : 500 Del.quantity cm3/ : 285.0...292.0 1000 s: (281.5...295.5)

Aneroid pressure h: -

Speed rom : 500 Del.quantity cm3/: 202.0...205.0 1000 s: (198.5...208.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.60

rpm : 940...950 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 125.0...155.0

1000 s: (121.0...159.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 3.40...3.80
Del.quantity cm3/: 19.0...25.0
1000 s: (15.0...29.0)
Spread cm3 : 10.00

1000 s: (14.00)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

Note remarks

: MB 9,6 p : 27.05.91 Test sheet Edition : 24.4.91 Replaces : ISO-4113 Test oil

Combination no. : 0 402 646 924

Injection pump

Pump designation: PE6P120A320LS7837 EP type number : 0 412 626 842

Governor

Governor design. : RQ300/950PA971-3 : 0 421 801 557 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M401 LA Engine

: 250.0 1st version kW : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

: 8.00X2.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 20.00...21.00 Firing order : 6-3-5-2-4-1

: 0-60-120-180-240-300 Phasing

-360

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

rpm: 600 1st speed

Rack travel in mm : 14.70...14.90

Del.quantity cm3/: 23.3...23.5

100 s: (23.0...23.8)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.0 2nd speed Rack travel in mm : 5.6...6.2 Del.quantity cm3/ : 1.6...2.2 100 s: (1.3...2.5)

Spread cm3 : 0.6100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1000 : 233.0...235.0 Del.quantity

1000 : (230.0...238.0) : 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed : 600 rom Rack travel in mm: 20.0

Testing: 1st rack travel in: 14.50 rpm : 990...1005 Speed 2nd rack travel in: 4.00 Speed : 1065...1095 rpm 4th rack travel in: 1200 Speed rpm : 0.00...1.50LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 5.9 Testing: Speed rpm Minimum rack trave: 7.90 : 300 rpm Rack travel in mm : 5.60...6.20 Rack travel in mm : 2.00 : 380...420 Speed COM TORQUE CONTROL Dimension a mm : 0.40 nd speed rpm : 950 Rack travel in m: 15.50...15.70 2nd speed nom 3rd speed rpm : 800 Rack travel in m: 15.60...15.80 Aneroid/Altitude Compensator Test 1st version Setting Speed rpm : 600 Pressure hPa : 1000 : 14.70...14.90 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : 200 Rack travel in m: 10.00...10.20 2nd pressure hPa : 600 Rack travel in m: 13.50...13.70 3rd pressure hPa : 1250 Rack travel in m: 14.80...15.00 \* 4th pressure hPa : 1450 Rack travel in m: 15.40...15.60 5th pressure hPa : -Rack travel in m: 9.30...9.50 FUEL DELIVERY CHARACTERISTICS

Del.quantity cm3/: 251.0...254.0 1000 s: (248.0...257.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: 1800 : 800 Speed rpm Del.quantity cm3/: 250.0...254.0 1000 s: (247.0...257.0) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 135.0...137.0 1000 s: (132.0...140.0) : 8.00 Spread cm3 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 14.50 Speed rpm : 990...1005

Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

Speed

1st version

Aneroid pressure h: 1800

MCT

: 950

Note remarks

Test sheet : MB 11,1 b 1 : 03.06.91 Edition : 24.4.91 Replaces : ISO-4113 Test oil

Combination no. : 0 402 646 931

Injection pump

Pump designation : PE6P12OA32OLS7837 : 0 412 626 842 EP type number

Governor

: RQV300...1050PA797-Governor design.

24

: 0 421 813 911 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M441 LA

: 250.0 1st version kW Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow 0

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35) Rack travel in mm : 20.00...21.00

Firing order : 6-3-5-2-4-1

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.70...14.90

Del.quantity cm3/: 23.4...23.6

100 s: (23.1...23.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 6.3...6.9 Del.quantity cm3/ : 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.6Spread 100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 1.00...1.50 travel mm

2nd speed : 608 rpm

: 4.80...5.30 travel mm

3rd speed : 820 rpm

: 5.90...6.40 travel mm

: 1108 4th speed rpm

travel mm : 8.30...8.80

5th speed : 1280 rpm

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1100 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Speed rpm : 600
Aneroid pressure h: 1000
Del.quantity : 234.0...236.0
1000 : (231.0...239.0)
Spread cm3 : 5.00
1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 118...126 Testing: 1st rack travel in: 13.90 rpm : 1090...1105 Speed 2nd rack travel in: 4.00 rpm : 1165...1195 Speed 4th rack travel in: 1300 rpm : 0.00...1.00 Speed LOW TDLE 1 Control lever position degrees: 81...89 Testing: Speed rpm : 200 Minimum rack trave: 7.70 rpm : 300 Speed Rack travel in mm : 6.30...6.90 CONSTANT REGULATION rpm : 300...550 Speed TORQUE CONTROL Dimension a mm : 1.00 2nd speed rpm : 1050 Rack travel in m: 14.90...15.10 3rd speed rpm : 800 Rack travel in m: 15.50...15.70 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rpm Pressure hPa : 1000 Rack travel mm : 14.70...14.90 Measurement 1/min: 600 Speed 1st pressure hPa : 200 Rack travel in m: 10.00...10.20 2nd pressure hPa : 600 Rack travel in m: 13.70...13.90

3rd pressure hPa : 1250 Rack travel in m: 14.80...15.00 \* 4th pressure hPa : 1400 Rack travel in m: 15.30...15.50 5th pressure hPa : -Rack travel in m: 9.30...9.50 START CUT-OUT Speed 1/min: 220 (240) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1800 : 1050 Speed rom Del.quantity cm3/: 235.0...238.0 1000 s: (232.0...241.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: 1800 Speed : 800 rpm Del.quantity cm3/: 248.0...252.0 1000 s: (245.0...255.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 135.0...137.0 1000 s: (132.0...140.0) Spread cm3 : 8.00 1000 s: (12.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 13.90 rpm : 1090...1105 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 220.0...240.0 1000 s: (216.0...244.0) Remarks: \* Increase in control-rod travel with respect to setting at least 0.1 mm